



## Searching for cumulative understanding of effectiveness

*A focus on critical factors of environmental assessment*

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# Searching for cumulative understanding of effectiveness

A focus on critical factors of environmental assessment

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PhD Thesis

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Searching for cumulative understanding of effectiveness – A focus on critical factors of environmental assessment

PhD Thesis

Department of Development and Planning

The Danish Center for Environmental Assessment

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## **Preface**

In 2005 when I began my master study, I was involved in the translation and compilation of a book on the experience and practice of strategic environmental assessment (SEA). It was the first time I had approached the knowledge on SEA systematically. I took it for granted that SEA works and is being implemented systematically according to the stages involved: from screening and scoping to monitoring and follow-up. For the following three years, I worked as an SEA practitioner on different kinds of cities in China, such as industry-dense cities, and other tourist-oriented cities. Those cases made a significant impact on me in many ways. What impressed me most were the moments that confused me and made me reflect upon SEA. These included times spent with critics from the local community, suffering from pollution, questioning the value of our work, as they believed nothing ever changed and nothing was going to change despite SEA being undertaken. They also included fierce discussion on sensitive issues during the SEA review meeting with experts, different stakeholders and governmental officials. I realized that SEA is far more than following formal procedures, undertaking technical work and writing up SEA reports. I found that several factors influence how SEA is perceived, used, or not used, in planning and decision-making.

Later on, as a researcher, I have enjoyed studying in an environment with inspiration from multiple disciplines with a mass of discussion on social science theories and their implications for practice, which has guided me in my reflections and enquiries. A series of workshops on decision-making theories in 2009 organised by my two supervisors broadened my scope to pursue in depth some of the understanding of environmental assessment through a sociological lens. This had a profound influence and shifted my perception of SEA from technical procedures to the more process concerns that lead to its effectiveness. Coupled with the system thinking, my participation in a project on evaluation of the SEA of the Copenhagen Spatial Plan in 2011 made me reflect profoundly upon how big an influence a practitioner can have, in contrast to what I had experienced earlier. In a certain sense, the later stage of the PhD study has offered me a chance to see something new not only in SEA at the front-line implementation but also in me as an individual along the journey.

My first acknowledgements go to my two supervisors, Lone Kørnøv and Per Christensen, who are tolerant and patient with my slow learning, are always there with encouragement, inspiration, and give far more than one might expect. Thanks to the wonderful research group at The Danish Center for Environmental Assessment, where I have enjoyed many happy times with lots of fun both academically and socially. I would also like to thank the Department of Development and Planning, where nice and helpful colleagues have supported me along the journey in many ways.

Great thanks to all the interviewees in Copenhagen Municipality, who were generous in providing all the information I needed and engaged in the discussion with excellent views and insights. I have really appreciated the financial support from the EU Grant, Otto Mønsted's Fond, Det Obelske Familiefond, and the Doctoral School of Science, Engineering and Medicine at Aalborg University, which made it possible to attend professional training sessions and international conferences.

I would also like to thank Xiangyun Du, who brought me to Denmark and helped me to adapt to the new environment with care and enthusiasm, and encouraged me all the way, and Haiying Yang, who gave me courage to challenge myself, prompted me when I was lost, and offered me a warm house that felt like home. I am also thankful to my friends, Wen Liu, Jingjing Gao, Yihuan Zou, Huichun Li, Jian Dong, Jianhang Jiao, Weiwei Xia for both interesting discussions and happy moments. Lastly, I owe much to my family, though at a long distance, for showing great support for both my professional and personal development.



## **Summary**

‘Effectiveness’ is a broadly used concept in the environmental assessment (EA) community with diffused dimensions and a delimited theoretical foundation to approach and understand it. A variety of definitions of the term have been invented and used in a broad-brush manner without a clear distinction or cumulative framing between them. The causation behind EA effectiveness is fragmented in terms of the lack of system thinking and a delimited collective understanding of the factors determining it. Besides, the bottom-up perspective has rarely been employed, especially on the role of front-line practitioners and their discretion in influencing the EA implementation process. Therefore this research aims to cumulate the understanding of the concept of EA effectiveness coupled with the critical factors that determine it from an implementation perspective. The study is undertaken by focusing on questions like 1) what are the critical factors determining EA implementation; 2) how is EA effectiveness researched; 3) how do the role and discretion of practitioners influence EA implementation?

The concept of effectiveness is studied through mixed methods using a pragmatic approach. The first research question relates to the mapping of critical factors that influence the effectiveness of strategic environmental assessment (SEA) and environmental impact assessment (EIA) guided by implementation theory, in which a distinction is made between stage factors and general factors to address the different functions of the factors found in an extensive literature review. The critical factors interact in complex ways either relating to different stages of the EA implementation process, or exerting an influence generally. Based upon the synthesis of the understanding of EA critical factors, the second research question leads to the analysis of how effectiveness has evolved from a historical perspective. The discourse on effectiveness shows a non-cumulative tendency of the research, with different assumptions and overlapping meanings. Effectiveness, coupled with the understanding of stage and general factors, shows its potential to go beyond semantic distinction to synthesise a common understanding.

The third research question relates to an empirical study of the SEA of the Copenhagen Spatial Plan 2009, with a focus on the influence of street-level bureaucracy (SLB) on the SEA implementation. This leads to the analysis of the practitioners’ role and their discretion, exercised in a positive and deliberative

way, which challenges the embedded negative interpretation in Lipsky's SLB theory. The case study brings up the theoretical understanding of practitioners' discretion on the agenda. It addresses how discretion is exercised and exerts a crucial influence in the EA implementation process signified in different dimensions. Rule discretion, value discretion and task discretion are interlinked and function in aggregate to make a difference in EA implementation.

As a diffused concept, effectiveness can be understood systematically from an implementation perspective coupled with the critical factors determining it. Implementation theory sets a pertinent framework within which to structuralize the different functions of critical factors and so to influence planning and decision-making. It is suggested that acknowledgement of practitioners' discretion in implementing EA increases the insight into the dynamic and uncertain nature of the EA process. More broadly, our perception of EA effectiveness should be reframed, adapted and updated in accordance with the critical factors determining it, the discretion exercised by EA practitioners and the context in which it takes place.

## Resumé

‘Effektivitet’ er et udbredt koncept indenfor miljøvurderinger. Begrebet har mange dimensioner, men der forelægger begrænset teoretisk materiale for, hvordan dette skal håndteres og forstås. En bred vifte af termer er blevet udviklet for effektivitet, og disse bliver i vidt omfang brugt uden en klar skelnen imellem hinanden. Forståelsen af miljøvurderingseffektivitet er fragmenteret på grund af manglende ‘system thinking’ samt en manglende fælles forståelse af de faktorer som der skaber effektivitet. ‘Bottom up’ perspektivet bliver desuden sjældent brugt af udøvere, og deres diskretion influerer implementeringsprocessen af miljøvurderinger. Den nærværende forskning har derfor til formål at skabe forståelse af miljøvurderingseffektivitet, og de kritiske faktorer som der påvirker miljøvurderingseffektivitet fra et implementeringsperspektiv.

Forskningen fokuserer på de følgende 3 forskningsspørgsmål:

1. Hvilke kritiske faktorer påvirker implementeringen af miljøvurderinger?
2. Hvordan opnås miljøvurderingseffektivitet?
3. Hvordan påvirker udøvere og deres diskretion implementeringen af miljøvurderinger?

Effektivitetskonceptet studeres gennem flere metoder der alle har en pragmatisk tilgang. Det første forskningsspørgsmål beskæftiger sig med implementeringsteori, og det involverer en kortlægning, af de kritiske faktorer som kan påvirke miljøvurderingseffektivitet på alle niveauer. Der vil i denne kortlægning blive skelnet imellem fasefaktorer og generelle faktorer, for derved at differentiere imellem faktorerne i den underliggende litteratur. De kritiske faktorer interagerer på en kompleks måde, hvorigennem nogle influerer hele implementeringsfasen, imens at andre kun influerer delelementer. Forskningsspørgsmål nummer 2 bygger på en forståelse af syntesen af de påvirkende faktorer, og det leder til en analyse af, hvordan effektivitet har udviklet sig rent historisk. Diskursen af effektivitet viser en ikke-akkumulerende tendens, hvor forskere anvender blandede antagelser og modstridende definitioner. Effektivitet koblet med en forståelse af fasefaktorer og generelle faktorer påviser et potentiale for at opnå meget mere end blot semantisk adskillelse og synteses af fælles forståelse.

Det tredje forskningsspørgsmål omhandler empiriske studier af en strategisk miljøvurdering af 'Den tænkende storby-københavns kommuneplan 2009', hvorigennem der specielt fokuseres på hvordan bureaukrati 'på gadeplan' påvirker implementeringen. Dette resulterer i en analyse af udøvernes rolle og deres positive samt bevidste diskretion; en klar metodisk udfordring til den negative fortolkning i Lipsky's teori om 'street level bureaucracy'. Studiet bidrager med teoretisk forståelse af udøvernes diskretion, og det viser at diskretion flourer og at det har afgørende indflydelse i implementeringsfasen af miljøvurderinger. Regeldiskretion, værdidiskretion og opgavediskretion hænger sammen og de influerer implementeringsprocessen på en akkumulerende måde. Selvom at effektivitet er et diffust koncept, kan det forstås systematisk fra et implementeringsperspektiv, når det sammenholdes med de påvirkende kritiske faktorer. Implementeringsteori bidrager med en relevant ramme til at strukturere de kritiske faktoreres påvirkning af planlægning og beslutningstagning. Den nærværende forskning forslår, at en anerkendelse af udøvernes diskretion i implementeringsfasen af miljøvurderinger vil forøge forståelsen af hvor dynamisk og usikker miljøvurderingsprocessen er. Generelt bør der udvikles en ny teoretisk ramme for miljøvurderingseffektivitet, der er tilpasset i overensstemmelse med de influerende kritiske faktorer, den diskretionen der bliver udført af udøverne og den kontekstuelle sammenhæng.



## **1. Introduction**

Environmental assessment (EA) has, since its birth, been introduced and institutionalized in over 100 jurisdictions, with the expectation that it will function as a tool to assist consideration of environmental impacts within decision-making, and thus contribute to environmental protection and sustainable development (Sadler, 1996). Environmental impact assessment (EIA), as its predecessor, originated in the US National Environmental Policy Act in 1969, and was adopted worldwide thereafter, with a focus at the project level. Based upon the experience of EIA practice, strategic environmental assessment (SEA) was introduced later to take into account policy, planning, and programming. Here EA is used to include both EIA and SEA.

With decades of practice, a variety of research has been done to evaluate EA performance with varied approaches and results, aiming to strengthen the understanding of EA effectiveness from different perspectives. ‘Effectiveness’ is a popular term that is well accepted and commonly used in the literature and endowed with various expectations of EA. One assumes that the meaning of effectiveness is understood and shared within the research community. Throughout the thesis I investigate the concept of EA effectiveness with a focus upon critical factors that determine effectiveness. In this context, effectiveness refers to EA’s influence on decision-making. By critical factors, I mean factors that either support or hinder EA effectiveness, which I will discuss further in Zhang et al. (2013a, b).

The chapter starts by summarising how the concept of effectiveness has been studied in previous research in terms of its discourse and the underlying causation. It then outlines the rationale for the choice of the research topic, which is argued from three perspectives: the fragmented understanding of what determines or drives EA effectiveness, the delimited theoretical foundation of EA research, and the under-researched bottom-up focus in the field. To build upon that, the research questions and the structure of the thesis follow at the end.

### **1.1. Non-cumulative research on EA effectiveness**

Effectiveness is widely used as a familiar concept in the literature. It has been approached and interpreted from different perspectives, with varied assumptions and expectations underpinning the concept. The plurality of effectiveness and its sweeping presence in the literature seized my attention, prompting me to

question whether different schools of thought build upon each other to cumulate our understanding, or are just detached from each other and interpreted indiscriminately. This suggests the point of departure to investigate what the evaluation of EA effectiveness is based on and by what it is determined, as I will mainly present in this section.

### 1.1.1 Quality, efficiency and effectiveness under different ‘names’

The early evaluation of EA performance used a technical rational view to check if EA followed the procedures (e.g. from screening and scoping to monitoring and follow-up) in compliance with the requirements of the guidelines and/or if the legal requirements are sufficient, resulting in the quality of the EA and/or Environmental Impact Statement (EIS). The concept of quality is employed to measure how well the procedures are followed and if the content of the EIS is well covered, and results and suggestions are clearly stated. A review package based on a procedure-oriented checklist was prevalent at the beginning and is still relevant in recent studies (e.g. Badr et al., 2011; Fischer, 2010). The best established and most frequently used are Lee and Colley’s review package (1990) and the European Commission’s review checklist (1994).

Later on, the perception of well-performed EA evolved to take into account both EA procedures and outcomes, to preempt the potentially embarrassing situation in which “the operation went well but the patient died” (Stoeglehner et al., 2009). The quality of EA refers to not only well-followed procedures to meet the legal requirements, but also the evaluation of its influence on decision-making. The broadened concept of quality was elaborated by Ortolano to cover both influence on the weight given to environmental factors in the decision-making process and influence on the decision outcome on whether to approve, modify or terminate the project (Ortolano, 1993). A well-performed EA was later acknowledged to go beyond the procedures and embrace a more complex picture of the dynamic process, involving different levels of organisations and stakeholders with diverse and even competing interests. Relevant actors enter into the decision-making agenda to make their voice heard and exert an influence in reframing and reshaping the EA process. The EA process can be driven by numerous internal and external factors that go beyond the normative track of what is supposed to happen in practice. Accordingly, attention has then shifted from quality to effectiveness with regard to the plural objectives, expectations and effects produced from the EA process. The reference criteria of

effectiveness are defined by the evaluation of EA performance, which is grounded differently. The question then arises, “effective compared with what?” Based upon different criteria, effectiveness has been conceptualised into four particular ways of thinking.

The first of these schools is oriented at goal/objective-based evaluation. It relates to whether the EA process achieves its objectives, be they improved environmental protection or sustainable development. It was first proposed by Sadler (1996) as substantive effectiveness in the International Study of the Effectiveness of Environmental Assessment and later used to guide many empirical studies.

The second type is based on process evaluation. In Sadler’s study (1996), it refers to whether the EA process is in compliance with the legislation and guidelines, leading to procedural effectiveness. It is akin to the early version of quality, though the terms “procedure” and “process” are used interchangeably here (see Christensen et al., 2012). It evolved to take into account process-relevant effects, such as participatory and systematic process, and was wrapped up with the dynamics of the process and capacity involved (Hildén et al., 2004). Emphasis has also been given to the cost-benefit of an EA process to see if it is completed at least cost in the minimum time, which Sadler termed “transactive effectiveness” (Sadler, 1996). In most cases, efficiency is more commonly used than transactive effectiveness.

The third one is based on outcome evaluation. This refers to whether EA brings a certain outcome, such as knowledge empowerment and learning (Jha-Thakur et al., 2009; Stoeglehner et al., 2009), that values its influence on people’s perception and awareness (Cashmore et al., 2007; Sheate and Partidário, 2010). These perspectives are explored and often combined with goal and process-based evaluation. Stoeglehner and his colleagues (2009) broadened substantive effectiveness to embrace the indirect impact of EA and renamed it environmental effectiveness.

There are still others working on the interface between EA and its context, taking into account EA’s impact on the external environment as well on society as a whole. This leads to some transformative changes of organisational culture and institutional setting (Bina, 2008; Cashmore et al., 2004; Van Buuren and



Nooteboom, 2009). This conceptualisation of EA effectiveness is wrapped up with outcome-based evaluation and embodied in many ways that use reformulated terms such as democratic effectiveness (Stoeglehner et al., 2009), incremental effectiveness (Bina, 2008), and transformative potentialities (Cashmore et al., 2008).

‘Effectiveness’ is pervasive in the literature, and seems a well-understood concept. Yet it is difficult to say if these different dimensions of effectiveness are at the same level of discussion if they are just literally distinguished, or else it is just a matter of exchanging opinions. In this regard, I argue that the concept of effectiveness, especially the permeating manner of using it, with people continually talking past each other, merits deeper understanding and investigation. Clarification of the concept of effectiveness is to a certain extent missing in current research to help us to master the meaning of the term, resolve the confusion, and highlight the distinction between different ‘dimensions’ of effectiveness, if indeed there are many dimensions to be distinguished. Furthermore, the current understanding of EA effectiveness has never formulated a common understanding that could be built upon, akin to that which Kuhn elaborated as non-cumulative social science research (Kuhn, 1962). Kuhn – challenging the prevailing notion of science as cumulative and innovative – argues that science develops through change, with one theory (“paradigm”) replacing another. This happens through either “normal science” or “revolutionary science” (Kuhn, 1962).

The kind of cumulateness in mind in this thesis is the normal science cumulation, in which scientific knowledge is viewed as bricks in a larger puzzle of understanding. Illustrated by Merton’s metaphor of ‘standing on the shoulders of others’ when we innovate (Merton, 1973), the cumulateness in this thesis is defined as:

- *The process in which we build upon the existing ideas and findings of others to create new understandings and innovations*

‘Others’ refer here to both other EA researchers (mainly undertaking empirical studies), and scholars in relevant fields other than EA (mainly theoretical based work). When cumulation happens, EA scientific results build upon one another so later research extends and unifies earlier research (Hedges, 1987). The cumulateness can be:

- Empirical cumulateness: when new empirical work uses or tests previous empirical findings. It further aims to formulate a simplified framework to make sense of conceptual understanding. It will be exemplified and discussed in Zhang et al. (2013a, b);
- Conceptual cumulateness: when the interpretation of a phenomenon is conceptualised based upon previous understanding of the concept, which is the initial stage for theoretical understanding. In this study it is to investigate the historical development of different dimensions of effectiveness and the discourse therein, as summarised above and discussed further in Christensen et al. (2012);
- Theoretical cumulateness: when theory is used or tested to cumulate previous knowledge and guide further understanding, as presented in sections 1.2, 2.1 and Zhang et al. (2013 a, b).

The three types of cumulateness are coherent in accordance with the inductive and deductive ways of researching. Empirical knowledge cumulates towards contributing to embracing conceptual understanding. Further, the conceptualised knowledge cumulates with condensed and distilled meaning to contribute to formulating a theoretical framework, and more maturely, theory development. Otherwise, the cumulateness in a deductive manner takes the point of departure from existing theory, or theory from other relevant disciplines, to cumulate the understanding of a certain concept, for example EA effectiveness. The conceptual cumulateness is supported by a variety of empirical work, such as the previous understanding of factors determining EA effectiveness, as I will present in the next section. Both the inductive and deductive ways of cumulateness can be found in this study, and I will present these further in chapter two.

#### 1.1.2 Understanding the causation behind EA effectiveness

EA effectiveness is determined and driven by a series of factors which are both crucial and critical, either facilitating or impeding EA's function and its way towards being effective. A variety of literature has contributed in different ways to the understanding of what influences the outcome and output of EA, and how EA effectiveness can be assured. Some set the premise for an effective EA. Nooteboom (1999) emphasises the "conditions for SEA to become more effective", addressing the importance of learning and communication, the timeline of tiering between SEA and EIA, and strengthened linkage between

policy, planning, programming and the project. Others look at the basic principle of an effective process, and Sadler and Verheem mention “the elements of an effective SEA process/procedure”. This covers five condensed aspects: the role of the public, role of environmental agencies/authorities, and suitability of EIA procedures for SEA, linkage of SEA to project EIA, and SEA quality standards and review mechanisms (Sadler and Verheem, 1996).

Still others set various criteria with reference to either best practice, formulating the ideal EA, or accumulating the characteristics of perfect EA performance (e.g. IAIA, 2002; Fischer and Gazzola, 2006; Noble, 2009). Some criteria are closely relevant to the quality, as discussed above. For example, Glasson and his colleagues (1997) talk about both “key quality criteria for EIS” and “determinants of EA quality”, where the notion of “factors” is proposed with three different aspects: factors related to the project, factors related to the experience of people involved, and other factors such as the availability of EA legislation and guidelines, resources, and commitment of various parties to the process (Glasson et al., 1997, p. 454). Here “criteria”, “determinants” and “factors” are all used without distinction to set the standards of a good quality EIA. For the quality of SEA, IAIA launched its “SEA performance criteria” and stated that a good quality SEA process is integrated, sustainability-led, focused, accountable, participative, and iterative (IAIA, 2002).

The focus on criteria has moved forward to include more expectation of an effective EA. Fischer and Gazzola developed the notion of “criteria” further to cover both context criteria and methodological criteria. Among these, the institutional framework, effective cooperation and public participation, and tiering provide a well-established environment for EA, whilst a stakeholder-driven, focused, adaptable process and sufficient information function as safeguards for the EA process (Fischer and Gazzola, 2006). It was then developed more fully by Noble, based on Fischer and Gazzola’s two categories, which he renamed system criteria and process criteria, but which he supplemented with results criteria, referring to SEA’s influence on decision-making, changes to a project, and the capability to promote system-wide learning (Noble, 2009). According to the SEA Directive, the criteria of effectiveness are based on the extent to which SEA has an impact on the planning process, the content of plans and programmes, and the benefits of SEA. It addresses criteria such as the integration of environmental considerations into

decision-making, participation and cooperation between different authorities, and transparent decision-making (COM 469, 2009). The assumption behind various criteria is normative and context-free with a picture of what well-performed EA should look like, and it thereby cannot answer why EA may or may not be effective and what is the causation behind effectiveness (Hilding-Rydevik and Bjarnadóttir, 2007).

To shift from the normative view of the criteria that an effective EA should meet, other studies emphasise what actively contributes to or impedes EA effectiveness. The Finnish Ministry of the Environment conducted a workshop on SEA effectiveness in transport planning, focusing on two kinds of factors. One is “indispensable factors” that exert an influence in all circumstances, i.e. integration between EA and planning, tiering, timing, political will and use of information; the other is “facilitating factors”, whose influence varies from case to case, such as legal provisions, tailoring of the assessment, the information provided, networking, and integrated assessment approaches (Finnish Ministry of the Environment, 2001). This signifies that factors could play different background roles associated with each context, and thus should be taken into account differently. More studies have been done on factors leading to effectiveness based on in-depth case studies; for example, Sheate and Partidário (2010) use “success factors” and “barriers to success” in their analysis. More details have been discussed in part two of the thesis in Zhang et al. (2013a) and Christensen et al. (2012).

This has left us with the semantic illusion that a variety of literature addresses how EA can be effective and what determines it. The work being done seems relevant either from a normative point of departure or from an empirical understanding, but under different ‘names’. The terminology used is difficult to differentiate, and terms like “elements”, “criteria”, “conditions”, “factors”, and “drivers” are commonly used. The meaning of these concepts is blurred and diffuse. The explicit descriptions of these concepts have subtle differences in terms of the ingredients that are wrapped up in them. Furthermore, these ingredients are formulated in abstract terms, giving only vague direction for practice. A variety of fluffy words are enumerated, as in one of Fischer and Gauzzola’s methodological criteria: “a stakeholder-driven, focused, iterative, flexible, and adaptable SEA process that is open to the input of the general public” (Fischer and Gazzola, 2006, p. 402). These words are frequently seen in

many SEA principles and criteria, and when they are packed together, often coexisting quite incompatibly in one sentence, it is easy to be baffled. For example, “iterative” aims more at the procedure level, “flexible” and “adaptable” are meant to refer to the EA process, whilst “stakeholder-driven” and “focused” are based more on the EA system. All in all, our understanding of the causation behind EA effectiveness is very fragmented and vague. Little systematic research has been done to investigate why EA is or is not effective and how those factors function and play a role in influencing EA effectiveness.

### **1.2. The rationale for the choice of the research topic**

As can be seen from the above, the concept of effectiveness is very broad and vague, which makes it, and the causation behind it, difficult to understand. The research on effectiveness has only sparsely been cumulated in a way that enables one contribution to build upon another. New names under effectiveness are easily invented and introduced, without explicit elaboration of the distinctions and similarities between them. The rationale for this research is related to this, and covers mainly:

- To make a cumulated contribution to the understanding of critical factors for EA effectiveness – building upon existing knowledge and supported by an implementation theoretic understanding.
- To supplement with specific study the understanding of the role of individual planners for EA effectiveness and implementation.

The research thereby aims to add to a conceptual and empirical cumulation of EA effectiveness research. This will be further motivated in the following. Firstly, research on the evaluation of EA effectiveness plus various best practice criteria or principles cannot tell us explicitly, and seldom helps us improve our understanding of, what determines or drives EA effectiveness. Whilst separate case studies unravelling why EA does or does not work are quite context-dependent, and largely emphasize individual procedures without any causal mechanism between different EA stages, it is difficult to tell whether the conditions are allowed or what are the drivers to move from one stage to the next, or if the situation is changed or the effects are accumulated when several stages of actions or activities exert an influence together (Cashmore et al., 2004; Sabatier and Jenkins-Smith, 1993). On the other hand, the EA process is more of a multi-cycle practice rather than a single cycle, and multi-dimensional with the involvement of different levels of government, organisations and institutions,

and the players therein, with competing interests, individual preferences and perceptions, and constant learning. This demands a way of thinking at the system level and a deliberative understanding of the inter-linkage between different stages of the EA implementation process.

Further, the unsystematic understanding of effectiveness is largely attributed to the weak theoretical foundation since its origins of EA (Cashmore et al., 2004). EA has developed from the rapid institutionalization of doing it in practice within the framework of a technical rationality model. Later on, the focus has shifted from procedural-oriented experience to the substantive role and theoretical advancement of EA (Wallington et al., 2007). The theory here refers to what Merton has called middle range theories which “lie between the minor but necessary working hypotheses that evolve in abundance during day-to-day research and the all-inclusive systematic efforts to develop a unified theory that will explain all the observed uniformities of social behavior, social organisation, and social change” (Merton, 1949, p. 39). However, despite this evolution, described by Wallington and colleagues (2007), with more theoretical engagement within the field of EA research, I sensed early in the process of the research that the use of theories in EA research is still limited. This motivated a look at the ways in which theories are worked with and the types of theories used.

There are differences in the ways theory is used and the extent to which theory is involved in research. Table 1.1 summarises different degrees of theory usage from an inductive/deductive point of view. One extreme is *pure induction* with no theory used but only knowledge discovery. The other is *pure deduction* standing only on theory.

Considering the degree to which theory is involved in research, there are four types. Non-attached theory uses theory as ‘name dropping’ without further reflection and discussion based on theory. It is pervasive in much of the literature that takes a broad conceptual framework, packed with a long list of factors; attached theory goes a step further to attach discussion in relation to theory, and the empirical work is guided by theory and analysed in accordance with the theory being used; imposed theory structure uses theory to tell the story with guided structure on reality, and the story-telling remains in compliance with the selected theory explaining the phenomenon; imposed theory commits

theory to practice and tries to test theory in a real case. The four categories are more commonly found in real research practice. However, it should not be obligatory to compile each case into the above categories. They should only be used to conceptualise how one connects theory with empirical work.

Induction/ deduction	Point of departure	How	What
Pure induction	No model/theory at all	Only knowledge discovery	No theory used
Unstructured induction	Broad conceptual framework applied/derived from literature review. Long list of factors that can help explain	No theoretical discussion/instead significance of findings	Non-attached theory (name dropping without use/reflection)
Theory guided induction	Point of departure in an explicit theory to specify a theory connected list of explanatory variables	Guided by theory	Attached theory (non-explicit/ structured testing- but discussion of findings in relation to theory)
Imposed theory structure	Point of departure in theory/ guided structure in reality	Theory used to tell the story of IA	Story telling (use of theory)
Imposed theory	Theory is specified for a real world case	Theory is tested against real IA and planning	Imposed theory (deduction, testing)
Pure deduction	‘Pure’ theory	-	-

**Table 1.1** Different ways of using theory

To capture a sense of how theory has been addressed in current EA research, I used the literature reviewed in Zhang et al. (2013a, b), with 30 articles on SEA and 33 on EIA. For SEA, as can be seen from Table 1.2, 20 out of 30 articles make no use of theory, representing 67% of the total (Zhang et al., 2013a). Another 6 articles have discussions in relation to theory but with no real case testing. There are 2 articles with imposed theory structure as the guidance in story-telling, one conducted with the use of implementation theory to help understand the planner’s ownership in promoting SEA effectiveness

(Stoeglehner et al., 2009), the other with a view from theory on social learning to formulate the analytical framework of effectiveness in an Austrian context (Stoeglehner, 2010).

Imposed theory usage is found in two articles: Runhaar and Driessen (2007) incorporated the “structuredness” of a policy problem with four case studies in the Netherlands to analyse the factors contributing to or impeding the impact of the SEA. Sheate and Partidário (2010) specified the theory of knowledge brokerage in six cases in Portugal and the United Kingdom to address the issue of communication in SEA practice.

Type of theory usage	Example of literature	Number
No theory used	Bina, 2008; d’Auria and Cinnéide, 2009; Dusik and Sadler, 2004; Elling, 2000; Fischer, 2002; Fischer, 2010; Fischer and Gazzola, 2006; Gachechiladze et al., 2009; Hildén et al., 2004; Liou and Yu, 2004; Noble, 2004; Noble, 2009; Retief et al., 2008; Song and Glasson, 2010; Tao et al., 2007; Thérivel and Walsh, 2006; Thérivel et al., 2009; Van Buuren and Nooteboom, 2010; Wang et al., 2009; Zhu and Ru, 2008	20
Non-attached theory	-	-
Attached theory	Hilding-Rydevik and Bjarnadóttir, 2007; Retief, 2007; Thérivel and Minas, 2002; Theophilou et al., 2010; Unalan and Cowell, 2009; Van Buuren and Nooteboom, 2009	6
Imposed theory structure	Stoeglehner et al., 2009; Stoeglehner, 2010	2
Imposed theory	Runhaar and Driessen, 2007; Sheate and Partidário, 2010	2
‘Pure’ theory	-	-

**Table 1.2** How theory is used in SEA literature

Of the 33 EIA articles reviewed in Zhang et al. (2013b), 29 include no theory, representing 88% of the total (Table 1.3). There are two articles with some reflection attached to theory generally. One article is found to have imposed



theory structure. Palerm (2000) conducted the research with the point of departure from Habermas's communicative action to formulate evaluative criteria for public participation. Only one article uses the theory of critical realism to trace the causation of the transformative influences in three EA cases (Cashmore et al., 2008).

Type of theory usage	Example of literature	Number
No theory used	Ahammed and Harvey, 2004; Ahmad and Wood, 2002; Alemagi et al., 2007; Ali, 2007; Androulidakis and Karakassis, 2006; Annandale, 2001; Barker and Wood, 1999; Cashmore et al., 2004; Cashmore et al., 2007; Cherp, 2001; Cherp and Golubeva, 2004; Christensen, 2006; Christensen et al., 2005; Fitzpatrick and Sinclair, 2009; Glasson et al., 2000; Jay et al., 2007; Kahangirwe, 2011; Kruopiené et al., 2009; Mao and Hills, 2002; Nielsen et al., 2005; Ogunba, 2004; Pinho et al., 2010; Pölönen, 2006; Slinger et al., 2005; Snell and Cowell, 2006; Toro et al., 2010; Wende, 2002; Wood et al., 2006; Wood et al., 2000	29
Non-attached theory	-	-
Attached theory	Baker and McLelland, 2003; Van Loon et al., 2010	2
Imposed theory structure	Palerm, 2000	1
Imposed theory	Cashmore et al., 2008	1
"Pure" theory	-	-

**Table 1.3** How theory is used in EIA literature

As can be seen from the above, the use of theory to cumulate our knowledge in environmental assessment is quite limited. On the one hand, the theory of EA or the understanding of how and why EA works is not well developed and specified (Cashmore et al., 2004; Bartlett and Kurian, 1999); on the other hand, the EA research has limited beneficiaries from the relatively well developed theories in decision making and planning (Lawrence, 2000).

Finally, EA has its origins in the technical rational model with embedded top-down thinking, which is exemplified in EA legislation, research and practice.

The emphasis is overwhelmingly on how EA procedures comply with the legal requirements in most of the evaluations on SEA and EIA performance, i.e. the report from the Commission of the European Communities on the effectiveness of the Directive on SEA 2001/42/EC (COM469, 2009) and EIA 2003/35/EC (COM 378, 2009). This can also be seen from the normative views in most “best practice criteria/principles”, which define what kind of standards a well-performed EA should meet. This top-down thinking leads to a tendency to under-emphasise the bottom-up perspective of EA practice at the front-line level, and the practitioners who are exercising their discretion to reshape and restructure the EA process, as discussed explicitly in Lipsky’s work (Lipsky, 1980). The potential of practitioners to exercise their discretion to have an influence on both the process and the output of EA is very much under-researched (Zhang et al., 2013c).

All in all, the fragmented understanding of what determines or drives EA effectiveness, with the lack of system thinking and inter-linkages between different stages of the EA process, the delimited theoretical foundation of EA research, and the under-researched bottom-up focus and practitioners’ role in implementing EA, indicate a need for research for an improved and cumulated understanding of EA and its effectiveness. This also originates in my individual curiosity after three year master study as a member of a Chinese SEA team. Here I experienced confusion and a general uncertainty concerning the weight and role of an SEA, as well as the embarrassing position as a practitioner when the results of both EIS and the SEA process have so little influence on the decisions of government officials. This personal motivation and academic rationale provided the starting point for this study to focus on the critical factors of EA from an implementation theoretical perspective, based upon which the research objective and research questions are proposed as stated below.

### **1.3. Research objective and research questions**

The overall objective of the research in the thesis is:

- To further understand EA effectiveness in terms of critical factors influencing both the specific stages and the system generally from an implementation perspective, and reemphasise the largely neglected bottom-up focus on the practitioners’ role and their discretion in implementing EA in practice.

The concept of effectiveness is broad, as is what determines it. To provide the basis of the understanding, the overview of critical factors influencing (through either supporting or hindering) EA effectiveness is drawn from a literature review on both SEA and EIA. This is guided by the following research questions:

1. What are the critical factors influencing SEA and EIA effectiveness respectively from an implementation perspective? (Articles one and two)
2. How is EA effectiveness researched in terms of critical factors? (Article three)

A complementary study of the theoretical understanding of critical factors was conducted to investigate the role of practitioners and their influence in SEA implementation, inspired by the street level bureaucracy (SLB) theory, taking the SEA of the Copenhagen Spatial Plan 2009 as a case study. The different dimensions of practitioners' discretion are further explored to deepen the understanding of SEA implementation from the bottom-up perspective. This is directed by the following question:

3. How do the practitioners' role and their discretion influence SEA implementation? (Articles four and five)

#### **1.4. The structure of the thesis**

The thesis can be broadly conceived as having two parts: a review and a collection of five journal articles.

The review starts with the state of the art and then the rationale for the choice of the research topic, and thus leads to the research objective, research questions and overall introduction to the structure of the thesis that I have outlined here. Chapter two specifies the research methodology, the role of theory, the overall research approach and the methods that are employed to investigate the various data sources, with the research design outlined at the end. Chapter three addresses the overall theories, which set the foundation for the research undertaken and how these theories are connected and function in different ways in this study. Chapter four summarises the findings for research questions one and two, which are exemplified in articles one, two and three, which are the main theoretical part of the study. Chapter five assembles the main results for research question three from articles four and five, which are mainly the case study and its further reflection. Finally, the concluding remarks based upon the empirical work are discussed more generally in chapter six.

The second part contains a collection of five journal articles:

Article one: Zhang, J., Christensen, P., and Kørnøv, L. 2013. Review of critical factors for SEA implementation. *Environmental Impact Assessment Review* 38: 88-98. This maps the critical factors influencing the SEA implementation process with regard to both factors related with specific stages (stage factors) and factors that function in the whole SEA process in general (general factors), based on the comprehensive implementation model. It also sets the framework for mapping EIA critical factors in article two.

Article two: Zhang, J., Kørnøv, L., and Christensen, P. 2013. Critical factors for EIA implementation: literature review and research options. *Journal of Environmental Management*. Accepted. This summarises the stage factors and general factors that influence the EIA implementation process. Compared with the research findings of SEA in article one, it generates a discussion of the differences between SEA and EIA in terms of critical factors, and thus research implications for future work.

Article three: Christensen P., Kørnøv L., Zhang J. 2012. Searching for common denominators for SEA effectiveness. *Journal of Environmental Assessment Policy and Management*. Under review. This takes a step further based on article one and looks into the concept of SEA effectiveness and critical factors determining it. A multitude of meanings and dimensions of effectiveness exist and show the non-cumulative way of research. This also leads to the trial formulation of a comprehensive common understanding.

Article four: Kørnøv, L., Zhang, J., and Christensen, P. 2012. The influence of street level bureaucracy on the implementation of strategic environmental assessment. *Journal of Environmental Planning and Management*. Under Review, accepted. This studies the role of planners in influencing SEA and decision-making inspired from the street level bureaucracy theory, with the implementation of the SEA of the Copenhagen Spatial Plan from 2009 as a case study.

Article five: Zhang, J., Kørnøv, L., and Christensen, P. 2013. The discretionary power of the impact assessment practitioner. Final draft. This discusses the

different dimensions of practitioners' discretion in influencing EA performance and how they play a role in the implementation process.

## **2. Research methodology**

As argued in the previous chapter, there is delimited theoretical foundation in understanding EA effectiveness and the critical factors determining it. A critical approach is thus employed to investigate this under the guidance of theory. The research design was not pre-defined at the beginning of this study. Rather, it has purposely been an iterative process, navigating between relevant social science theories and empirical studies of practice. Therefore these theories play an important part in the research journey with the critical attitude of investigation and understanding, which I will discuss further in this chapter. The research methods are presented together with the overall research approach at the end.

### **2.1. The role of theory and cumulation**

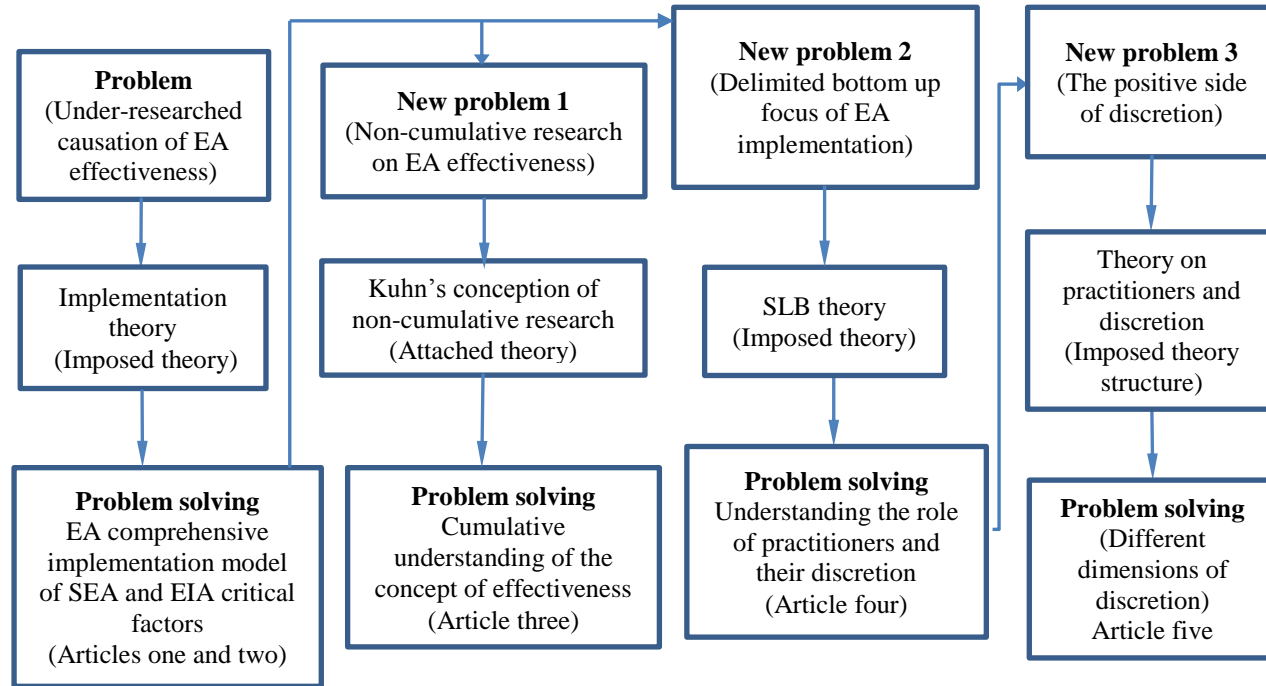
My initial interest in this topic originated from my individual doubting of SEA's potential to influence decision-making and my personal experience working as an SEA team member during my master study. As I realized, it is far from enough to produce a good Environmental Impact Statement (EIS). There are many factors determining whether environmental assessment can have an influence on the decision-making process, not to mention the inter-relation between several factors functioning together and a single factor exerting an influence the whole way.

Being inspired by a variety of decision-making theories, implementation theory was chosen to best capture how EA functions as a public policy and covers many issues of relevance during the implementation process of EA. Further, implementation theory provides the framework in which the existing EA studies upon single critical factors can be situated – and a more cumulative understanding developed. So implementation theory is used to guide the investigation process of critical factors and explain what influences the output and outcome of an EA. Thus implementation theory is used to formulate the framework in my first and second article to review critical factors in both SEA and EIA. The main concern in applying the same framework of reviewing SEA critical factors to EIA is to look at the similarities and differences between critical factors in SEA and its predecessor EIA, and to see if the framework

functions well in the realm of EIA. This is a trial process and, beyond my expectation, several interesting points appear afterwards concerning the proportions of stage factors and general factors. At the same time, in the review process, the concept of effectiveness is used in a sweeping manner with ambiguous assumptions and diffused meanings to cumulate understanding. It further directs the study to investigate the evolution of the concept of effectiveness from a historical view, trying to formulate a common understanding, associated with discussion of the findings based on Kuhn's interpretation of changes in the research field.

With the knowledge from the intensive literature review at the theoretical level, I bring the critical lens of seeing SEA as an implementation process to investigate a 'best case' study on SEA of Copenhagen Spatial Plan 2009. The point of departure is to see if some experience can be learned from this best case and to minimize the influence of "best practice criteria", and thus to investigate what factors influence SEA implementation. To take the timing of SEA as an example; it is a well-known critical factor to determine if SEA can be integrated with the planning process at the very beginning to have an influence. In the Copenhagen case, SEA starts early enough without any text written on the plan but only initial strategies and visions. This is an intrinsic example to jump out of the traditional "best practice criteria" to critically analyse the factors driving a best case and the differences that they make in practice.

Another consideration in this case study is to emphasise a bottom-up focus and investigate what kind of roles planners are playing to translate the measures proposed in the SEA report into reality. The planners are here perceived as street level bureaucrats (SLBs) at the delivery stage of SEA implementation. Prior understanding of the high level of engagement from planners in the SEA process was important in relation to studying the bottom-up approach to effectiveness and role of discretion. Lipsky's theory on street level bureaucracy has a complementary role here to magnify our understanding at the "frontier" of implementation process, as opposed to the prevailing top-down research of SEA and the delimited focus on practitioners as the key groups of individuals playing through the whole SEA process and the crucial group to make SEA happen and deliver its results into practice.



**Figure 2.1** The research route concerning theory usage



The SLB theory is used both to help us to understand the planner's role and behaviour generally and, conversely, to prove the non-explainable features found in the case, to put it specifically, the positive side of planners' discretion discussed in Lipsky's work, as explained in the fourth article. It then stimulates the birth of the fifth article which is inspired by theories on practitioners who are deliberately making a difference and exercising their discretion positively. The article further explores what kind of roles EA practitioners are playing and how they exercise their discretion in different ways to influence the EA process.

Therefore, theory plays a pivotal role not only in directing attention to potential interests of the research field but also in guiding the understanding of the problems and engaging theoretical knowledge with practical work under the conceptual lens. Different ways of using theory are employed depending on the nature of the problem, as elaborated above and summarised in figure 2.1. The iterative process of navigating between different problems, theories, and alternative solutions does not happen coincidentally. Rather, it is incorporated with reflective understanding and deliberative interpretation to make sense of what works and what does not, which I will elaborate further on in the next section.

## **2.2. A pragmatic approach with mixed methods**

The understanding of the concept of effectiveness and critical factors determining it is shaped and constructed by many theories, contexts, values and groups of practitioners imprinting an effect therein. As I have stated before, no pre-defined research design regulates the direction of this research. Rather, the non-programmed stance leaves an open space to remain flexible throughout the research process under the guidance of relevant social science theories and to derive critical reasoning from it. It is this reflective exploration and commitment to the uncertainties in the research that pave the way forward, enabling me to pick up what is useful and make it work, irrespective of schools of theories or methods. This pragmatic approach associated with mixed methods signifies its great potential in the long deliberation of research choices.

*A mixed methods way of thinking is an orientation toward social inquiry that actively invites us to participate in dialogue about multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple*

*standpoints on what is important and to be valued and cherished* (Greene, 2008, p. 20).

First of all, the pragmatic approach offers the organising principle to approach problems and evaluate the outcome. ‘What works and what does not’ determines the instrumental reasoning of choice of theory and methods in the problem solving process (Shields, 1996). Different theories are employed in the research in different ways to advance inquiry and reshape understanding. Implementation theory functions at the system level to structure the overview of EA critical factors. EA implementation at the front line is selected both as an under-researched theme and out of personal curiosity to underpin the role of practitioners, as inspired by Lipsky’s theory, which I will discuss further in chapter three.

On the other hand, the pragmatic approach helps to bridge the theory and practice and offers some new perspectives associated with social science theories in this regard. The reflective orientation of inquiry opens the opportunity for the researchers to cope with uncertainties and requires one to be flexible and adaptable (Morgan, 2007). The pragmatic approach accommodates the ground to find out what I want to know by using relevant theories to sort out and linking them to the empirical work.

Thirdly, the pragmatic approach is applicable at all levels (Shields, 1996). It is devoted here to spanning the EA implementation at different levels, transcending the distinction between EA critical factors that is either specific and stage-based or generalised, embracing mixed methods, whether they are inductive/deductive, quantitative/qualitative, theoretical/empirical, to redirect and reshape my research attention to explore the topics that influence most what I study and how I reflect upon it.

One could criticise this by asking “what do you mean by what works”. There is no universal value to make a judgment. As the research focus does not come into being by itself, the research questions cannot possibly be perceived as “interesting” by all; the theories are not inherently relevant, the methods are not automatically compatible, it is always the researcher who makes the choices and decides where and how to go, which also involves personal knowledge and preference, educational background, social norms, cultural assumptions

(Morgan, 2007). Here in this research the pragmatic approach with mixed methods is employed to probe the problems I am interested in, and the theories and methods that work along the way for my enquiry.

### **2.3. Research methods**

In accordance with the pragmatic approach, the choice of methods is based on whether it can solve the problem considering the instrumental function and the feasibility to employ the methods. The overview of the main methods used is presented in this section and supplemented with detailed description from the methodology part of the articles in part two of the thesis.

#### **2.3.1 Literature study**

Literature study is used throughout the research both to derive new knowledge from the broad scientific literature that is missing from my learning process and to explore research gaps, so as to embed my research focus within the existing research (Hennink et al., 2011). More importantly, the literature presents a variety of information and data that can be regenerated according to the researcher's frame of reference. In this research the secondary data produced from the literature review plays a pivotal role in formulating the basis of understanding – and achieving the wanted cumulation of previous scholarly work. As I have argued previously, the research takes its point of departure from the lack of system thinking in the EA implementation process and the fragmented research on what drives EA effectiveness. It has determined that it is not possible to conduct an individual case study, whether a single case or multiple cases, to cover such an overview at the EA system level so as to generalise the knowledge.

Therefore, it involves a critical perspective to select secondary data in the literature as an option. On the other hand, it demands extensive efforts to actively rephrase the data, distill meaning in a different way from the authors, and present the data in a manner that matches the needs and framework of this research. This will be elaborated further in section 2.3.2 and the relevant articles (Zhang et al., 2013a, b).

The literature chosen is peer-reviewed journal articles, which show a kind of quality assurance in the research community. Further, the distinction between data sources has been clarified based on whether they are primary sources

(single case, double case, and multiple case) or secondary sources (general knowledge or theoretical research) (Zhang et al., 2013a, b). Further, the notions selected for the analysis of factors are considered in combination with the context from which they are extracted which is beyond the single sentences that are in focus. So the secondary data, to a certain extent, assures its quality in a deliberate data selection and interpretation process.

Here in this study the review of SEA and EIA critical factors gives an overview of how EA effectiveness and its critical factors are researched in the community, based on the literature reviewed, from which the notions are selected and re-organised based on the comprehensive EA implementation model that I use as the frame of reference to regenerate information (Zhang et al., 2013a, b). On the other hand, it provides a window and platform to study the different schools of theoretical thought and the debates and critiques behind them, thus to inspire the choice of theory, stimulate critical thinking and guide the empirical work, as discussed in the preceding section.

### 2.3.2 Content analysis

Given one of the goals of the study – to gain understanding of critical factors identified by other scholars – content analysis was the approach for analysis. Content analysis is “a technique for text analysis aiming to obtain, through systematic and objective procedures, recurring themes grouped to compose an empirically defined category. These categories facilitate the interpretation of data related to the research object” (Hedler and Gibram, 2009, p. 216). Involved in this approach, coding is oriented to collect data selectively as “every way of seeing is also a way of not seeing” (Silverman, 2000, p. 147). Therefore coding is a kind of information-reorganised process and “represents the operations by which data are broken down, conceptualized, and put back together in new ways” (Strauss and Corbin, 1990, p. 57).

Selecting the codes demands a critical reading process, which is reading beyond the text. The wordings or notions of factors are searched for within the text, taking into account the context in which they are situated. The notions of factors are selected with caution so as neither to impose those which do not have a strong presence of meaning into a grouping nor to drop those which signify a weak or even absent meaning without considering the context (Hennink et al., 2011). I have therefore used an open and inductive coding:

*Open coding is the part of analysis that pertains specifically to the naming and categorizing of phenomena through close examination of data. During open coding, the data are broken down into discrete parts, closely examined, compared for similarities and differences, and questions are asked about the phenomena as reflected in the data (Strauss and Corbin, 1990, p. 64).*

The coding process demands grouping and regrouping of notions found, distilling of meanings and naming each group. This process is specified in articles one and two in the section on research methodology (Zhang et al., 2013a, b).

Content analysis is criticised for its dependence on secondary data for over-interpretation of the text. It is argued that “there are justified limits to what we can legitimately do with a text...the text is always a function of interpretation” (Fish, 1980, p. 256). This does not mean interpretation is unacceptable, as it happens all along our reading and writing and we do it all the time, even in daily talking and communication, which is a crucial part of how language functions. To keep this in mind, I read beyond the text to respect the context it is grounded in and to identify the data source these arguments are produced from. Therefore it is not only the notions but also the meaning they represent and my reflectivity upon the meaning that I pick up for data analysis.

### 2.3.3 Case study and involved methods

A case study is one of the qualitative research traditions commonly used in social scientific enquiry (Creswell, 1998). There are different types of case studies, exploratory, descriptive, or explanatory (Yin, 1989). What interested me most is the exploratory case study that uses theory to inspire thinking and direct the attention of the researcher to emphasise certain issues in data collection and analysis (Yin, 1989).

Case study in this research is an important complement to the literature analysis which is based on other researchers’ empirical studies. It also provides a good opportunity for the local municipality to review and evaluate their performance in implementing SEA. The results again show the value of the evaluation of SEA performance and thus motivate the authority to conduct follow-up and learn from the success experience, which is ignored by many in SEA practice.

The case of the SEA of the Copenhagen Spatial Plan 2009 functions in this study in the following ways: firstly, it is used to investigate what is happening during the process of SEA implementation; secondly, it aims to craft the understanding of the planners' influence in the implementation under the guidance of SLB theory; thirdly, it is used to inform the over-generalised negative role of planners (Kørnøv et al., 2012); fourthly, it opens up a new area of research to explore what SLB theory cannot explain, as discussed in the fifth article (Zhang et al., 2013c).

As also stated in article four, it should always be kept in mind that a case study is context-dependent. This does not mean the results of the case study are undervalued or less inspiring. Conversely, it brings fresh air to the learning of professional knowledge, especially for front-line practitioners and experts. Flyvbjerg argues that "context-dependent knowledge and experience are at the very heart of expert activity...and the case study is especially well suited to produce this knowledge" (Flyvbjerg, 2006, p. 222-223). In this research, the case study selected stands out as a best practice of SEA of spatial planning in the Danish context. It shows its uniqueness in the following ways: SEA starts at a very early stage in the planning process when only the spatial strategy and visions exist; both mitigation and enhancement measures are proposed in the SEA report with a clear connection to relevant plans in which they should be implemented. In this sense, the case is interesting in itself and worthy of further learning and exploration.

The data collection of the case draws on multiple sources of information, including documentary analysis, questionnaires, and focus group interviews, of which the focus group interview needs further analysis in the next section.

#### 2.3.4 Focus group interview

A focus group interview is employed to collect data for the case. "It is a research technique that collects data through group interaction on a topic determined by the researcher. In essence, it is the researcher's interest that provides the focus, whereas the data themselves come from the group interaction" (Morgan, 1997, p. 6). This shows three key characteristics of this method: a focus on specific issues, with a predetermined group of participants closely relevant to the topic, and conducting an interactive discussion (Hennink

et al., 2011). The discussion is led by a trained moderator over a period of 60-90 minutes within a comfortable atmosphere for participants to express their views freely (Hennink et al., 2011). It is good to bear in mind that there is a difference between focus groups and group interviews. Though focus groups can be considered as one form of group interview, not all group interviews are focus groups. The fundamental difference between the two is that while in group interviews there is a lot of interaction between the interviewees and interviewer, with many direct questions, focus groups have lots of interaction between the interviewees themselves (Halkier, 2009). “In a focus group, individuals often argue with each other and challenge each other’s views. Arguing means the researcher may get more realistic accounts of what people think, because they are forced to think about and possibly revise their views” (Bryman and Teevan, 2005, p. 195). Therefore the moderator plays a key role here to help the participants become familiar with the topic, to facilitate the interviewees’ discussion with each other, to direct the discussion sessions and make social interaction possible without controlling it (Halkier, 2009).

The focus group interview provides an opportunity to observe intense interaction in a relatively short period; participants build upon each other’s discussion and understanding, from which more complex data can be generated (Morgan, 1997). The discussion is flexible both to produce concrete data on specific questions and explore the reasons behind them. In this case study, planners are encouraged to evaluate the SEA performance and reflect upon why some mitigation measures were implemented and others were not. Further, the focus group interview can also facilitate the collection of data on group norms (Kitzinger, 1995). One thing to be aware of is that hierarchy within the group may affect the data collected and prevent people talking about certain issues, so inhibiting open comments and discussion (Kitzinger, 1995; Halkier, 2009). The focus group interview in the case of the SEA of the Copenhagen Spatial Plan 2009 was conducted in May 2011, and subsequently transcribed and checked by the interviewees. The results are analysed specifically in article four (Kørnøv et al., 2012).

#### **2.4. Overall research approach**

The research approach I use in this thesis is an assembly of the components I have presented so far in this chapter. As I have argued earlier, theory plays a crucial role in both directing the research attention and exploring new problems

and interests during the journey. A critical stance with iterative navigation between theory and practice permeates the whole research process. A pragmatic approach with mixed methods is employed to light the way for the research choices. I have summarised my research approach in connection with the research questions I proposed in Chapter one, the theory and methods that are used, and their contribution to the five articles in Table 2.1.

As shown in the Table, I will focus on literature studies coupled with content analysis to conduct the theoretical understanding of EA critical factors and effectiveness, which are presented in articles one, two and three. Among these, article three effectively summarises the findings based on articles one and two to formulate the reflection and synergy of thought. This part of the work is mainly on the guidance of implementation theory from which the comprehensive EA implementation model is deduced as the research framework for the three articles. The data source is mainly from published literature drawn from the scientific database in Scopus, 30 on SEA and 33 on EIA. The three articles map the critical factors influencing EA effectiveness from an implementation perspective. Drawing from a historical viewpoint, the evolution of the concept of effectiveness and factors determining it are investigated towards a cumulative knowledge and understanding.

The research emphasises a strengthened bottom-up focus to zoom in on the EA implementation at the front line, where planners can play an important role. This analysis is informed by SLB theory. The case study of the SEA of the Copenhagen Spatial Plan 2009 in article four takes as its point of departure to understand the influence of planners on the SEA implementation process. It is through the lens of the planners themselves that SEA performance is reviewed and evaluated and reflected upon. The data is mainly based on primary sources from document analysis, the focus group interview and questionnaires. The analysis shows a very high level of implementation attributed to the commitment and deliberation of the planners involved. In this case the SLB theory is disproved and brings to attention the discretion planners possess. Therefore article five goes back to the literature studies to wrap up research on practitioners who are making a difference and the ways they exercise discretion. The analysis of articles four and five is oriented to answer question three from a combined theoretical and empirical perspective, which I will discuss further in chapter five.



Research Questions	Research Question 1 What are the critical factors influencing SEA and EIA effectiveness respectively from an implementation perspective?		Research Question 2 How is EA effectiveness researched in terms of critical factors?	Research Question 3 How do the practitioners' role and their discretionary power influence the SEA implementation?	
Ways of theory usage	Imposed theory		Attached theory	Imposed theory	Imposed theory structure
Theory	Implementation theory		Kuhn's conception of non-cumulative research	SLB theory	Theory on practitioners and discretion power
Methodology	A pragmatic approach with mixed methods				
Methods	Literature studies Content analysis Based on secondary data		Literature studies Based on secondary data	Case study Focus group interview Document analysis Questionnaire Based on primary data	Literature studies Content analysis Secondary data
Articles	Article 1 Review of critical factors for SEA implementation	Article 2 Critical factors for EIA implementation: Literature review and research options	Article 3 Searching for common denominators for SEA effectiveness	Article 4 The influence of street level bureaucracy on the implementation of Strategic Environmental Assessment	Article 5 The discretionary power of the impact assessment practitioner
Output	Cumulation of knowledge on effectiveness and factors determining it both empirically and theoretically			The role of practitioners and their discretion	

**Table 2.1** Overview of the research approach

I have addressed the crucial role of theory in this study. Inspired by theories from decision-making and public policy, I will thereby present an overview of the theories that informed my thinking and how they contribute to the overall theoretical framework in chapter three.



### **3. An implementation theoretical framework**

I have explained previously the crucial role theory plays in the research project. This chapter, then, will present the rationale for the choice of the theory, the basic concepts and the theories in use, as well as its integration with EA. A theoretical framework on EA as an implementation process will be proposed. This chapter sets the theoretical basis of the research with a focus on implementation theory as the overall theory functioning at the system level that structures the understanding of the EA implementation process.

#### **3.1. Implementation theoretical approaches and synthesis**

Environmental assessment is practised in a world with uncertainties, paradoxes, contradictions, politics, which go far beyond the assessment itself. The dynamics and diversity of EA practice with unattained expectations requires a theory to craft the understanding of the process and explain it. Those that perceive the process between input and output as a black box certainly cannot do the job (e.g. Cohen et al., 1972). Theories on evaluation cannot answer what happens in the process and diagnose the problem. After careful reading and thinking, implementation theory appears a likely candidate.

Therefore, I started to look into the theory to see if it can explain the EA process. Implementation theory asks how policies are actually put into use and result in the observed outcome or output, not how they should be implemented. The focus on the causes, the process and its relation to the consequences provides the lens for me to see the EA process more closely, and to capture the determinants driving the EA process forward. A pragmatic choice tells me that this is exactly what I want to know about environmental assessment, to link the EA process and its output, which sets the anchoring point of the study.

Although it is easy to be inspired by implementation theory, the EA literature seldom makes the connection. Implementation theory helps here to describe the lifecycle of EA and explain its course, it is flexible enough to shift between top-down and bottom-up perspectives and make them integrated, and can help me to understand the EA process better and determine what the critical factors in EA implementation are.

Along with the research, the process to link the theory and the empirical work makes me realise that implementation theory also offers something new, which is beyond my expectation. It touches upon many determinant variables so that I can zoom in on and absorb more interesting topics, such as implementation at the street level, which merits more understanding in the EA literature. Therefore I use implementation theory coupled with SLB theory to cover a bottom-up view of an EA implementation process. Implementation theory is hence a pragmatic choice to structure the understanding of EA critical factors and couple this with a bottom-up perspective of EA implementation.

### 3.1.1 Implementation and the policy cycle

To implement, according to Merriam-Webster's Collegiate Dictionary, means "to carry out, accomplish, especially to give practical effect to and ensure actual fulfillment by concrete measures". In the discipline of public administration and political science, the object to implement is 'public policy', which refers to 'policies developed by governmental bodies and officials' (Anderson, 1975, p. 3). Policies cover both goals and the means of achieving them (Pressman and Wildavsky, 1984, p. xxi). There are various chances that a policy may fail. To name a few:

- Being 'crippled at birth' due to extravagant ambition, misunderstanding of the problem, unclear goals, impossible goals, and conflicting goals (Hogwood and Gunn, 1984; Linder and Peters, 1987; Winter, 1999).
- Inadequate time and resources, especially delayed or missing resources when a "bottleneck" happens (Hogwood and Gunn, 1984; Sabatier and Mazmanian, 1980);
- Based on insufficient causality, or too long a sequence of cause and effect chains (Bardach, 1977; Sabatier and Mazmanian, 1980);
- Being sabotaged intentionally or accidentally during the process (Brehm and Gates, 1997; Linder and Peters, 1987). An example could be when stakeholders who object to the project exert their power to change the agenda and start a new game;
- Being replaced by other decisions (Hogwood and Gunn, 1984). This could happen when the project being assessed in EIA has been dropped and substituted by another new one;
- Perfect communication and corporation is impossible (Hogwood and Gunn, 1984). It is frequently reported in EA literature that it is difficult

to collaborate between levels of government, institutions and practitioners;

- Perfect compliance from the target group is unattainable (Hogwood and Gunn, 1984). An example could be if the mitigation measures proposed in SEA only exist on paper with no-one implementing them;
- Negative side-effects cover the original effects (Linder and Peters, 1987). An example could be if the mitigation measures proposed by SEA have side-effects on the environment.

There are many ways to perceive an implementation process, be it top-down, bottom-up or a more synthesised perspective. The evolution of the implementation study has seen debate between the different schools of thought. I do not mean to join the debate, but to pragmatically select those elements that could potentially either facilitate or inspire, or even make a connection to the understanding of the EA implementation process, as presented in the following sections.

### 3.1.2 The top-down approach

Early research on implementation was based on goal achievement evaluation. The attention given to implementation all began from the influential book “Implementation” by Pressman and Wildavsky in 1973, with the subtitle “How great expectations in Washington are dashed in Oakland”, showing an obvious top-down focus (Pressman and Wildavsky, 1973). The top-down approach, later developed by Van Meter and Van Horn (1975), and also Mazmanian and Sabatier (1981), considers policy formulated ‘at the top’, such as the central government, and then being interpreted and delivered downwards between different levels of organisations, and finally carried out in practice by those ‘agents’ which execute the policy ‘at the bottom’, thus achieving the policy goals.

Van Meter and Van Horn exemplified the implementation process in a model that embraces six variables. It is crucial to define clear standards and the objectives of the policy at the outset. The communication between members of organisations and the structure of the implementing agencies play a determinant role that affects the policy performance. It is also influenced by the ability of the implementers to respond to and carry out the policy. Besides the above four components, the resources available and the economic, social, and political

conditions impinge upon the output of the policy (Van Meter and Van Horn, 1975). Beyond the six variables, they cover a cluster of elements leading to good performance of a policy. The model has set the agenda for many follow-up studies focusing on the list of key variables towards goal achievement. Nevertheless, the role of implementers in this model is perceived as responding to or complying with their prescribed tasks, which are criticised later by the bottom-up approach.

In a similar style to Van Meter and Van Horn, Sabatier and Mazmanian in their early work (1980) have developed further a list of seventeen factors/variables affecting policy output. The factors are grouped into three categories to form a control mechanism for the policy implementation process. The assumption is that the central power can control the implementation better by exercising these variables, which shows a relatively optimistic view compared with Pressman and Wildavsky's work. Nevertheless, the scope for shaping an implementation process by hierarchical control is quite limited due to various non-controllable variables in reality and the non-existence of a perfect causal chain (Winter, 2003).

The list of variables presented in the models of the top-down approach implies that there are various factors driving the policy process forward and imprinting an effect on the policy output. However, the over-long list of variables was criticised by Matland: "A literature with three hundred critical variables doesn't need more variables: it needs structure" (Matland, 1995, p.146). The top-down approach tends to over-emphasise the role of central players and their delimited ability to regulate the dynamic policy process, and especially the behaviour of other implementers (Barrett, 2004; Matland, 1995). It was then challenged by many bottom-up scholars, who address the influential role of front-line implementers in interpreting the policy and being innovative, as presented in the next section.

### 3.1.3 The bottom-up approach

In contrast to the top-down approach, the other main school studies implementation from the front-line workers, whom Lipsky termed "street level bureaucrats (SLBs)". Lipsky's research on the behaviour of SLBs is one of the best-known works with a bottom-up focus. In his view, the SLBs cover a range of field workers, such as teachers, doctors, lawyers, policemen, or social

workers, and share some common characteristics which can be generalised (Lipsky, 1980). They are overloaded in terms of tight time-schedules and inadequate resources. They need to make instant decisions in front of unpredictable clients and unique cases. Therefore they have to be innovative to find a solution for each case. As the mediator between the bureaucracy and the clients, they have to deal with emotional people with individual requirements, personal attitudes, dynamic needs and conflicts. They possess the discretion to interpret the policy with ambiguous goals and unclear methods and translate dogmatic rules into reality. On the other hand, as employees of the organisation, they must follow the rules and be monitored under the supervision of the management.

To find their way out, Lipsky argues, SLBs have developed a variety of coping strategies to keep their work manageable (Lipsky, 1980). They learn to routinize their task and invent their own standards by which to judge and classify each case. They ration service to a limited number of clients and cases by making them wait, referring clients to other agencies and colleagues, and screening out time-consuming cases. Or they slow down their work pace to shirk or work only on segments of the task, conserving their energy and working capacity, or adopt the judgments of their colleagues to simplify their decision-making process.

Lipsky further claims that “the decisions of street-level bureaucrats, the routines they establish, and the devices they invent to cope with uncertainties and work pressures, effectively become the public policies they carry out” (Lipsky, 1980, p. xii). According to Lipsky, the policy process is reshaped by SLBs who are the actual policy-makers who decide how the policy should be carried out. He maintains that the discretion that SLBs possess is the crux of the policy failure and thus should be limited and supervised by the management. The upside-down perspective makes him the founding father of the bottom-up approach and has a profound influence on later implementation research.

SLBs play a quite distinct role in the eyes of different scholars. Some consider that SLBs possess the discretion to be innovative during implementation. They are the actual decision-makers who define what should be implemented and how (Lipsky, 1980). In other studies, SLBs are just treated as one of the various implementers that are too impotent to change anything at the terminal of the administrative hierarchy (Sabatier, 1986). Still others argue that SLBs possess



too much discretion to bend or twist the policy intention to meet their own interests, which raises the need for managers or supervisors to minimize their discretion, refine their task, and monitor and regulate their behaviour to be consistent with what the policies have set them to do (Prottas, 1978). It is uncertain how to influence the behaviour of SLBs or whether they possess enough discretionary power to be actual decision-makers. However, this underlines that discretion can be perceived differently in terms of both the way SLBs exercise it and also the ideology it implies, which will be highlighted in chapter five and articles four and five (Kørnø et al., 2012; Zhang et al., 2013c).

Brehm and Gates (1997) have taken a similar view and stated that “bureaucrats make political decisions on the implementation of policy... despite significant efforts to constrain bureaucratic choices, bureaucrats possess significant degrees of discretion” (p. 3). Contrary to Lipsky, Brehm and Gates acknowledge the active role SLBs can play to accomplish their tasks. Meanwhile, they have also identified the passive attitude of SLBs during work. For example, SLBs can shirk during working hours by relaxing, conserving energy by postponing the tasks at hand or fulfilling only part of the task, or even sabotaging the policy delivered. They argue further that they choose to work, shirk or sabotage depending upon their own preferences, other colleagues and associates, supervisors, and their clients (Brehm and Gates, 1997).

Apart from the emphasis on the role of individual implementers, Elmore’s backward mapping takes a starting point from the front-line problems. He assumes that “the closer one is to the source of the problem, the greater is one’s ability to influence it, and the problem-solving ability of complex systems depends not on hierarchical control but on maximizing discretion at the point where the problem is most immediate” (Elmore, 1979, p. 605). Backward mapping starts from changes at the lowest level and possible ways to ensure these changes, and then traces back until it reaches the centre (Elmore, 1985). In contrast with the view of Lipsky that discretion should be regulated, Elmore argues that discretion is an “adaptive device” that can be exercised in a flexible way to deliver services efficiently (Elmore, 1979). This is a resonant critique which offers the potential to see the positive side of discretion which I will discuss in article four (Kørnø et al., 2012).

Akin to the top-downers being questioned about the over-emphasised role of the centre, bottom-uppers are criticised for undermining the influence of hierarchical control and exaggerating the role of front-line workers by minimizing the boundaries of their discretion, resulting in “the periphery to frustrate the center” (Sabatier, 1986). Furthermore, no matter what bottom-uppers use as the unit of analysis, be it individual bureaucrats or ‘implementation structure’ (Sabatier, 1986), the extent to which their behaviours can be generalised is very doubtful (Moore, 1987).

To understand implementation at the street level is pivotal for environmental assessment as being an area that is not well embraced and investigated empirically in the literature. The study takes as a starting point a look at how measures proposed in EIS are interpreted and carried out into practice in the SEA of the Copenhagen Spatial Plan 2009. This did not involve a mapping of the actors therein, nor did it intend to trace back to the centre power to investigate the route of development for a case. The bottom-up view is employed in this study to focus on how practitioners play their role in delivering SEA results in practice and use the practitioners’ lens to evaluate SEA performance. Further it needs the researcher to remain aware of how we see their behaviour and understand why they behave this way. Pragmatically, Lipsky’s SLB theory offers a potential way to structure the understanding of the practitioners’ role. This theory is thus employed to guide my investigation as a point of departure. Meanwhile the impression changes along with the communication with the practitioners, which is further elaborated in chapter five of the thesis.

#### 3.1.4 The synthesis

The top-down and bottom-up dichotomization delimits the potential to synthesise the holistic understanding of the policy implementation process. The evolution of the research on implementation later tends to avoid taking sides and covers both schools of thought.

One of the early endeavours to contribute to the synthesis was by Richard Elmore. He developed his ‘backward mapping’ approach further to combine it with ‘forward mapping’ (Elmore, 1985). As a complement to backward mapping, which draws a point of departure from the front line actors and their ability to problem-solve, forward mapping commences with an emphasis on the policy objectives and resources available, and then sketches possible means to

attain the ends without presuming a hierarchy between the actors and organisations involved (Elmore, 1985). Goggin and his colleagues set out their communication model to address the relationship between levels of government during policy implementation. The model is thus perceived as a representative of the third generation of implementation research (Goggin et al., 1990).

Besides the process-oriented understanding, Matland proposed a model to distinguish different kinds of implementation into four main categories by their levels of ambiguity and conflict: administrative implementation with both low ambiguity and low conflict in which the outcomes are determined by the resources available; political implementation with low ambiguity and high conflict where power plays a crucial role; experimental implementation with high ambiguity and low conflict in which contextual conditions influence the outcome significantly; and symbolic implementation with both high ambiguity and high conflict in which coalitions compete with each other (Matland, 1995). Matland's model unfolds different types of policy implementation. The question still remains to what extent different policies can be categorized into this matrix and how this distinction can help us to understand the implementation process better.

### **3.2. An integrated implementation model**

The synthesis of top-down and bottom-up tends to cover both sides to embrace the broad picture of a policy implementation process. Some focus on the relationship of actors therein as the dependent variable (Elmore, 1985), while others examine the performance of groups of actors as the dependent variable (Sabatier and Jenkins-Smith, 1993); still others include the differentiation of the process and the conditions framing it as the main concern (Matland, 1995). The research fails to formulate an aggregated understanding of the crux of implementation. Rather, Winter proposed an integrated implementation model to synthesize the five most important theoretical factors deduced from different schools of thought into a common framework of analysis. This sketches the main elements that implementation process normally goes through, put specifically in the following (Winter, 2003; Zhang et al., 2013a):

- The policy formulation process, which involves conflicts, bargaining and compromise. Those who lose in this round will make an effort to compensate in the next arena (Mazmanian and Sabatier, 1981). It is assumed that a valid causal theory exists with a description of

causations between goals and the means to achieve them, which are often not sufficient (Winter, 2003). Some policies are doomed to fail due to unclearly addressed problems, conflict between sub-problems, and a confused description of problems (Winter, 2003).

- The policy design, which contains a set of goals and the means to achieve them, appointed institutions, administrative procedures, and allocation of resources (May, 2003).
- The one or more organisations that interpret and deliver policy intentions into action. Inter-organisational behaviour is influenced by many factors such as resource interdependence, goal congruence, mutual trust, organisational culture, etc. (Lundin, 2007; Montjoy and O'Toole, 1979).
- The street level bureaucrats, as the last representatives of the executing organisations, hand over the decision from the administrative body to the target groups and mediate between them. They are most proximate to the specific cases, with the discretion to decide how to contextualize the policy and deliver it to its target group (Lipsky, 1980).
- The target group responds to the decisions with concrete changes in their behaviour and actions, or keeping their business as usual, depending on the time and cost of the changes, individual perceptions and preference, educational background, etc. (Winter, 2003).

It is not a linear process, but one with these factors interacting and adapting to each other in a certain social and political context to engrave their effects on the output and impact of the policy. Each of the elements could proceed to cover its own school of thought and thus become well informed and powerful. The flexibility to condense and expand this integrated implementation model shows its advantages when it comes to the empirical study. The choice could be to have an overview of the whole process while at the same time it is possible to zoom into several key features with the help of the relevant theoretical lens.

The thesis is pertinent to Winter's model, both in terms of cumulating the understanding of the EA process from an implementation perspective at the system level theoretically, and also in terms of the empirical cumulative understanding of critical factors influencing the EA implementation process, with the different function of the factors as the main concern. Furthermore, it directs attention to the under-researched EA performance at the final stage,

when it is transformed into concrete actions to influence decision-making. However, this does not mean that the other schools of implementation study presented above are of no interest. Rather, the literature approaches the implementation process from various angles, perceiving it as either goal-oriented or process-based, or even actors-based; this explicitly conceived implementation with multifaceted elements that Winter's model has filtered out, in one way or another, has inspired the process of study of this research.

### **3.3. EA as an implementation process**

Implementation is a process. It is dynamic, adaptive to the context and is shaped by the involvement of different levels of organisations and the actors therein. An implementation process comprises a series of stages that are sequentially connected and interacted, from policy intention to policy execution. Generally, these stages encompass agenda setting, initiation, policy formulation, followed by application and implementation, and then feedback and evaluation if needed, finally policy maintenance, succession and termination (Hill and Hupe, 2002). Though the blurred line between the stages in reality can be criticised, it is used in research to conceptualise a complex process that is chopped up into manageable pieces only for explicit understanding (Hill and Hupe, 2002).

From the standpoint of this thesis, the use of a stage model is employed for analysis of the factors determining different stages of the EA process, which I name 'stage factors'. The stages show distinct features and should be considered separately. Meanwhile, I acknowledge the interaction between stages and make a complement to analyse the factors that generally influence the whole EA process, and I call these 'general factors' in the analysis.

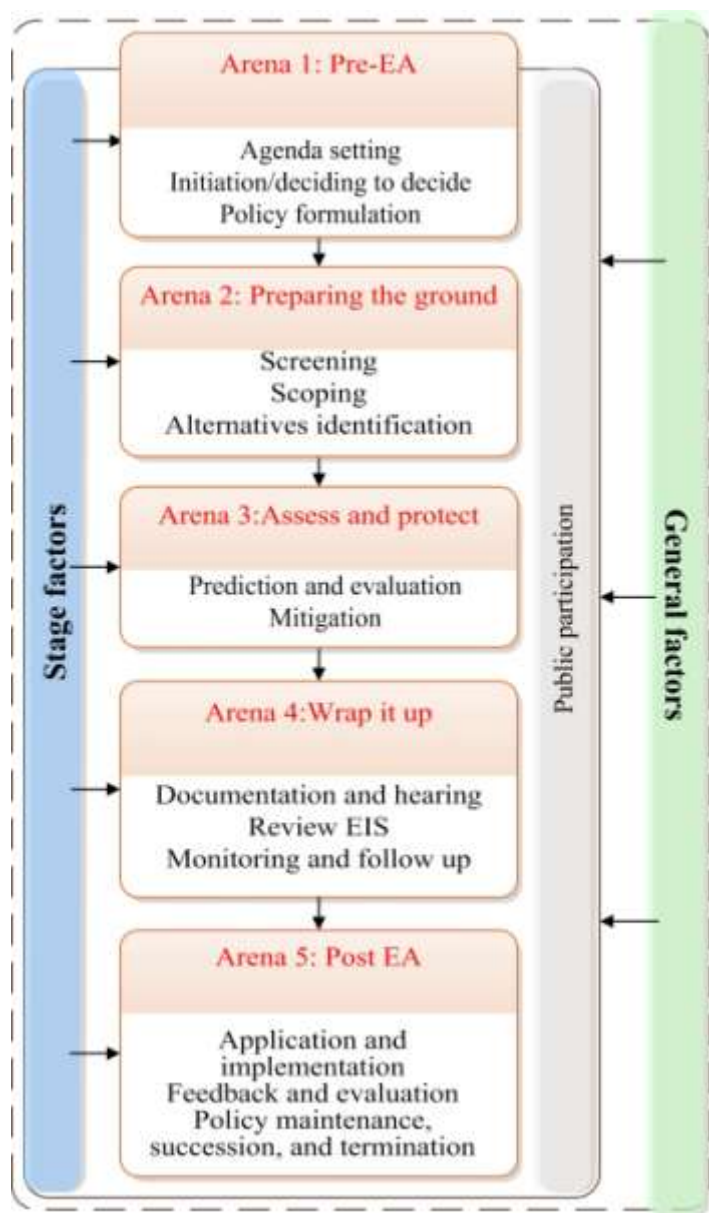
Both stage and general factors function together to drive and determine EA effectiveness. 'Effectiveness' in this study is confined to EA's influence on decision-making. By 'decision-making' I mean the decision process closely relevant to an EA process, and more specifically, the decision of the project, plan, or policy that EA is assessing. The transformative influence of EA on wider society is of another nature and thus beyond the scope of this thesis.

To further conceptualise an implementation process, Pressman and Wildavsky (1973), and also Hilgartner and Bosk (1988) propose the concept of an arena, conceiving the implementation process as a series of arenas to deliver the policy

into practice. Within each arena is set a small environment which is regulated by certain rules, formal or informal, to make things function, and to allow some activities and relevant discussion while ignoring or confining others (Zhang et al., 2013a). The rise and fall of the central issue in an arena is dynamic and influenced by competition and contested interests, varied attentions, the resources available and many other factors (Hilgartner and Bosk, 1988). In each arena, such as the preparation of a SEA, there are some “principles of selections” that set the frame of what issues should be addressed, who should be involved, and how to allocate the resources and set the priorities (Hilgartner and Bosk, 1988; Scott, 2001).

The arena is employed as the unit to conceptualise an implementation process. In this study, an EA implementation process refers to an EA’s lifecycle from when it is initiated and put on the agenda, to carrying out EA following the procedures (screening, scoping, ..., monitoring and follow-up), until evaluation of the EA performance, and finally the EA’s termination. An EA implementation process is perceived as comprising five arenas: pre-EA, post-EA and three others adapted from the traditional EA procedures, namely preparing the ground, assessment and protection, and wrapping it up, as visualised in Figure 3.1. Public participation is considered as a separate arena as it continues throughout the whole process. The comprehensive EA implementation model is analysed further in articles one and two of the thesis (Zhang et al., 2013a, b).

Why should implementation be introduced into the study of EA effectiveness? As I argued previously, the best practice principle or criterion is oriented at normative understanding without answering why EA may or may not be effective. An implementation study emphasises “the forces that determine policy impact” and typically asks “why did it happen this way?” (Van Meter and Van Horn, 1975, p. 448). To craft the understanding of the causation behind EA effectiveness, I argue that considering EA as an implementation process highlights its advantages from several perspectives:



**Figure 3.1** Comprehensive EA implementation model (Zhang et al., 2013a, b)

Firstly, EA as a public policy shares common characteristics with some other policies, ranging from problem formulation, evaluation of alternatives to implementation (Gordon et al., 1977). It also confronts several problems that many other policies experience. To study EA as a public policy from an implementation perspective could be beneficial for the theoretical foundation of

public policy studies. One can also learn the experience from a variety of empirical studies of policy processes and their recursive influence from and construction of the context.

Secondly, to perceive EA from an implementation perspective could widen the scope of our understanding and broaden the boundaries of EA as a system. It is not only the EA process that matters here, but also the concurrently happening activities along the way that have an influence. To depart from the conflicts at the outset of putting EA on the agenda, till inter-organisational communication and cooperation, and to deliver the EA results to decision-makers goes far beyond environmental assessment itself. Therefore, the EA process cannot stand alone without considering its dynamic interaction with its surroundings.

Thirdly, to conceive EA as an implementation process extends its lifecycle to include the pre-EA and post-EA stages in consideration. Some EA practice is doomed to be ineffective before EA has even started. As can be learned from implementation studies, symbolic EA may happen when EA is forced to be done by international aid projects, or to remain in compliance with the legislation in order to get a project licence permit. It also results in failure when a well-informed EA has been done with explicit mitigation measures but no responsible authority to follow it up and implement it. Looking beyond the EA process to cover its lifecycle is crucial for the understanding of why EA does or does not make a difference.

Therefore the whole EA lifecycle is in the scope of concern. Numerous factors affect EA implementation both internally and externally. The role and function of these factors may be distinct, be they factors influencing a specific stage or factors having a more general effect in the whole EA process. The next chapter will summarise the findings from mapping the stage factors and general factors in both SEA and EIA, and further how the concept of effectiveness has evolved and is understood, mainly based on articles one, two and three (Zhang et al., 2013a,b; Christensen et al., 2012).





#### **4. Cumulating understanding of critical factors**

Factors determining effectiveness are not without concern in the environmental assessment research, though in varied semantics and with different points of departure, as summarised in chapter one. Here I would like to target the distinct role and function of the factors which affect EA's influence on decision-making. The focus is on the factors that play a crucial role by either contributing to or impeding an effective EA process, which I name 'critical factors'. The factors are critical in a manner which is decisive in making a difference to decision-making due to EA's performance. The critical factors I am referring to are distinct from those factors that exist more distantly in the context, such as the contextual factors highlighted by Bina (2008).

This chapter synthesizes the main findings on critical factors in SEA and EIA, based on the comprehensive EA implementation model described in section 3.1. There is further discussion on critical reflection on a common understanding of the concept of effectiveness and the factors determining it. The overall purpose is to answer: 1) what are the critical factors that influence SEA and EIA effectiveness respectively from an implementation perspective, and 2) how is EA effectiveness researched in terms of critical factors, as research questions one and two proposed in section 1.3. Basically this is a condensed understanding extracted from articles one, two and three, and more explicit analysis and discussion will be found in part two of the thesis in each of these articles (Zhang et al., 2013a, b; Christensen et al., 2012).

##### **4.1. The framework of analysing stage factors and general factors**

As mentioned in the previous chapters, I refer to critical factors that play a role that is either linked to a specific stage of EA, or more relevant to the whole EA process, which I term 'stage factors' and 'general factors' respectively. To map the different critical factors, the analysis is based on reviewing the empirical work in the literature selected, 30 articles on SEA and 33 on EIA (Zhang et al., 2013 a, b). It starts by searching for those articles with reference to notions either theoretically or empirically argued as conditions, principles, criteria, or key elements that affect EA effectiveness or performance. These notions are cited and gathered as 'notions of critical factors', and later grouped into either stage factors or general factors, depending on their relevance to a specific stage

or the whole process generally, considering also the context these notions are extracted from. To give an example, in Retief et al. (2008) it is argued that “the scope of the SEAs was generally far too extensive with a large unmanageable number of issues, objectives and indicators. It is not possible to identify a formal scoping method or phase in any of the case studies” (p. 509). The notion of ‘clear environmental objectives’ is identified as relevant to the SEA stage of ‘scoping’. Therefore the notion here belongs to the pile of stage factors relating to scoping. Those factors based on more general discussion with no reference to any specific stage of EA are then grouped into general factors.

The notions of stage factors are then linked to the different stages based on the implementation model proposed in section 3.1. It embraces five arenas, as shown specifically in Table 4.1. The framework is used for the analysis of both SEA and EIA stage factors in the study. In terms of the number of notions of critical factors found in the literature, the implementation model offers a way to organise and analyse these stage factors. The five arenas investigated in both SEA and EIA are:

- Pre-EA, which includes agenda setting, initiation/deciding to decide, policy, plan or project formulation;
- Preparing the ground, including screening, scoping, identification of alternatives;
- Assess and protect, referring to the EA stage of prediction and mitigation;
- Wrap it up, including documentation, review EIS, and monitoring;
- Post-EA, which includes application and implementation, feedback and evaluation, policy, plan or project maintenance, succession or termination.

Besides, public participation as a process going through the whole process is analysed separately on its own.

<i>The heuristic arenas</i>	<i>The comprehensive model</i>
Pre-EA	Agenda setting
	Initiation/deciding to decide
	Policy, plan/project formulation
Preparing the ground	Screening
	Scoping
	Identification of alternatives
Assess and protect	Prediction and evaluation
	Mitigation
Public participation	Public participation
Wrap it up	Documentation and hearing
	Review EIS
	Monitoring and follow-up
Post-EA	Application and implementation
	Feedback and evaluation
	Policy/plan maintenance, succession, termination

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**Table 4.1** The implementation model containing environmental assessment stages (Zhang et al., 2013a, b)

The notions of SEA general factors follow an inductive route where their meanings are distilled, inducted and grouped into categories. For example, ‘time’, ‘financial’ and ‘human resources’ are all mentioned generally in the literature as pivotal to ensure a successful environmental assessment process. These notions are then packed together to belong to one category and referred to as ‘resources’. Finally, the more concrete description of these notions is then condensed into a manageable four big groups (see Table 4.2). The analysis of EIA general factors shows a slight difference, adjusted from SEA. It commences with the induction process. As time goes on, a majority of factors show some similarities to those found in SEA, with a tendency to be incorporated into four big groups similar to those in SEA. Later on, a combined inductive and deductive analytical process is employed to organise the general factors into big groups, with slight changes and adjustments compared with the process in SEA (Zhang et al., 2013b). The next two sections will summarise the main findings of SEA and EIA critical factors based on Zhang et al. (2013a, b).

<i>Inductive sub-groups</i>	<i>Groups at higher level</i>	<i>Final four groups</i>
Understanding of SEA	Communication and understanding	<i>Communication and understanding</i>
Acknowledging interests		
A broad approach to SEA		
Transparency and simplification		
Time	Time and resources	<i>Resources and capacities</i>
Money	Practitioner capability	
Resources		
Practitioner capability		
Integration		
Timing	Timing and	<i>Timing and organisation</i>
Networking	organisation	
Institutional framework	Explicit legal	
Tiering	framework	
Flexibility		
Explicit legal framework		
Will and trust	Will and trust	<i>Will and trust</i>

**Table 4.2** The inductive route to analyse SEA general factors (Zhang et al., 2013a)

## 4.2. Critical factors of EA implementation

### 4.2.1 EA stage factors

The understanding of critical factors determining EA effectiveness is synthesised in terms of mapping the stage factors and general factors in both SEA and EIA based on the comprehensive implementation model proposed in section 3.1. *The first point I would like to highlight is that the number of notions found that are relevant to different stages varies* (Table 4.3). For SEA, the stages with the most identified critical factors are: ‘Preparing the ground’ (N=18) and ‘Assess and protect’ (N=10), where the ‘hot spots’ of SEA, such as scoping (N=6), identification of alternatives (N=11) and prediction (N=9) are situated. There is a surprisingly small number of critical factors found in stages like “screening” (N=1), “mitigation” (N=1), and “monitoring and follow-up” (N=1), all of which are important stages of SEA and are supposed to receive more attention in the discussion of critical factors, as pointed out in Zhang et al. (2013a).

For EIA, the stage factors are analysed based on the 25 articles out of the 33 reviewed that are relevant. The two stages with the most identified critical factors are ‘Preparing the ground’ and ‘Wrap it up’, with some “hot spots” of EIA, like screening (N=9), scoping (N=19), documentation (N=10), review EIS (N=10), and monitoring and follow-up (N=12) situated in these two arenas (Zhang et al., 2013b). Comparatively speaking, prediction and mitigation are very much ignored stages, with 6 notions and no notions identified respectively. The same goes for the alternatives, with only one notion found in this stage. The choice of the scrutinised articles is a matter of concern here. The focus has been on those with key words like ‘evaluation’ or ‘system performance’ in the title during the search process. Articles with an emphasis on a specific issue in EIA are probably filtered out, with some consequent information loss.

Notions of critical factors	Pre-EA stage	Preparing the ground	Assess and protect	Public participation	Wrap it up	Post EA stage
SEA	1	18	10	24	7	5
EIA	0	29	6	25	32	10

**Table 4.3** Notions of critical factors for the five arenas plus public participation (Zhang et al., 2013a, b)

*The second result I want to address is that the pre- and post-SEA stages are under-researched in both SEA and EIA* (Zhang et al., 2013a, b). A critical aspect related to this is the assumption that the scope of influence varies during the early and late stages of decision-making. According to Mikkelsen and Riis (1989), the possibility of influencing a decision-making process goes up rapidly at the very beginning, and then slows down later on when knowledge is getting more and more accumulated. In the case of environmental assessment, this means the best opportunity to affect the agenda and confine the scope is at the initiation stage when EA is proposed to be on the agenda, as the pre-EA stage defined here. Yet the literature leaves the pre-stage as a black box to investigate the factors determining how an EA came into being and in which way it enters into the planning process. Timing is perceived as a critical factor, as environmental assessment can only make subtle changes when most decisions have already been made before EA starts. On the other hand, Mikkelsen and Riss’s decision-making curve tells us that information and knowledge on

environmental assessment rise tremendously at the final stage of the decision-making process, as the post-EA defined here, which is most appropriate for evaluation and wrapping up the lessons learned. The fundamental finding here is that the pre- and post-EA stages are substantially important for their potential not only to influence decision-making but also the learning process. It is argued that more attention should be given to the pre- and post-stage of EA in future work.

*The third finding I would like to underline is the methodologies used in the scrutinised articles on SEA and EIA, where most research is based on general knowledge, while limited study is founded on in-depth case studies and theoretical research* (Zhang et al., 2013a, b). For SEA, the sources of information are mainly from multi-case studies or merely rely on general knowledge, based on expert experience, interviews and questionnaires (see Table 4.4). The relatively weak foundation is also reflected in the fact that the main bulk of information is general and repetitive in nature. A minority of research is conducted based on in-depth single or double case studies. None of the articles found with stage factors is based on theoretical research. This signifies that there is an imbalance between the methodologies employed in the research. The majority refer to the general understanding of knowledge, while few pay attention to in-depth case studies and the theoretical foundations of the research.

Number of articles	Pre-SEA stage	Preparing the ground	Assess and protect	Public participation	Wrap it up	Post SEA stage
Single case	-	1	-	1	1	1
Double case	-	1	1	4	2	-
Multi-case	1	3	2	3	-	-
General knowledge	-	5	5	5	1	-
Theoretical research	-	-	-	-	-	-

**Table 4.4** Contribution of articles, and sources of knowledge for the five SEA arenas plus public participation (Zhang et al., 2013a)

For EIA, it is also notable that the pre-EIA stage is still under-researched just as in SEA, with no notions identified, while the post-EIA stage, on the other hand,

has attracted some discussion, potentially due to the attention being given to the evaluation of EIA (Zhang et al., 2013b). The 25 articles that are relevant to the discussion of stage factors show some similarity to the methodologies that are used in the scrutinized articles compared with SEA. General knowledge is overwhelmingly used as the data source for the analysis, and only a minority of them undertakes research based on in-depth case studies and theoretical research (Table 4.5).

Number of articles	Pre-EIA stage	Preparing the ground	Assess and protect	Public participation	Wrap it up	Post EIA stage
Single case	-	-	-	1	-	-
Double case	-	-	-	-	-	-
Multi case	-	2	1	3	1	3
General knowledge	-	12	4	9	3	9
Theoretical research	-	2	1	2	1	3

**Table 4.5** Contribution of articles, and sources of knowledge for the five EIA arenas plus public participation (Zhang et al., 2013b)

It can be concluded that the hot-spots of SEA and EIA vary according to the notions of the critical factors attributed to different stages. Among these, pre- and post-EA stages are under-researched in both SEA and EIA. For the methodologies used in the literature, the source of information for most research is based on general knowledge, with limited foundations from in-depth case studies and theoretical research. It is expected that the future research could go deeper in terms of the choice of methodologies (Zhang et al., 2013a, b).

#### 4.2.2 EA general factors

It is noteworthy that a large number of notions are found to refer to general factors in both SEA and EIA. Some are all well-known critical factors commonly present in the literature describing their importance. There are also others that are critical but rarely perceived as a critical factor in the discussion, like understanding of SEA concepts and political commitment (Zhang et al., 2013a). Though it depends very much on how the meanings of the notions are interpreted and grouped in the process of distilling, it should still be borne in



mind that more notions does not mean that the factor is more critical than others. Some factors are more frequently mentioned as a kind of common knowledge, as if they are customised or ‘routinised’ in the communication, or else it is the way we are filtering out something which appears unpopular. As Fish puts it, “in practice we all in fact do reject unacceptable readings and that more often than not we agree on the readings that are to be rejected” (Fish, 1980, p. 256).

On the other hand, one can question whether the large amount of general factors, especially in SEA, should be seen as a lack of concreteness, or if these factors are of a general nature. It is also pointed out in Zhang et al. (2013a) that general factors could be general because the specific problems are addressed as if they are general, for example, because the source of information is mainly from general knowledge as discussed above; or they could be general in nature in describing the broad sense of phenomena like “will and trust”, and “transparency”.

Technically, the process of distilling the meanings from the notions found involves subjectivity and bias. To find the common metaphor and name the groups of factors in abstract terms is comprehensive, depending on if the notions of factors relate to a difference in wording or in their essence, also taking the context of these notions into account. Nevertheless, it is judgmental to concretise the notions found and condense them into abstract conception during the inductive analytical process of general factors.

As for the methodologies used in the research of general factors (Zhang et al., 2013a, b), these show some similarity with the stage factors. For both SEA and EIA, a majority of the discussion on general factors relies overwhelmingly on general knowledge (Table 4.6). Few go for in-depth single case and double case studies, while only a minority of the articles are founded on theoretical research. This signifies again that the research on critical factors could go deeper as well as in the choice of methodologies.

Number of articles	Communication and understanding		Resources and capacities		Timing and organisation		Will and trust	
	SEA	EIA	SEA	EIA	SEA	EIA	SEA	EIA
Single case	1	0	1	0	1	0	-	0
Double case	3	0	2	0	2	0	2	0
Multi case	5	2	5	3	7	2	3	1
General knowledge	11	8	8	8	15	14	10	4
Theoretical research	3	3	3	3	1	4	2	3

**Table 4.6** Contribution of articles, and sources of knowledge for the four groups of EA general factors identified (Zhang et al., 2013a, b)

### 4.3. Comparison of SEA and EIA critical factors

As stated above, the framework for analysing stage and general factors of EIA is borrowed from those developed in SEA. The same implementation framework is used for the analysis of stage factors, as is the inductive technique used in analysing general factors. This section aims to compare the findings of critical factors of both SEA and EIA and to address the linkage and distinction between them towards empirically cumulative understanding.

SEA and EIA share a variety of stage factors, as can be seen from Table 4.7. Generally speaking, these factors carry some common characteristics in environmental assessment, thus having no distinctive role in SEA and EIA. For example, time and resources, tailored method, professional expertise, and expert judgments are all stage factors that are frequently mentioned in both SEA and EIA. In some situations, these factors could also be generally important for all stages, and can thus also be categorized as general factors. However, here they belong to stage factors because they are identified as relevant to specific stages when mentioned in the context of the articles. Some key words appear constantly in different stages in both SEA and EIA, such as mandatory screening criteria, mandatory requirement for public participation, mandatory review. It could be generalised that a mandatory requirement is crucial for some stages to be implemented better and is a critical factor in general, but has been separately embodied in specific stages; the same applies to time and resources.

Arenas	SEA stages factors	EIA stage factors
Pre-EA	- Political commitment at the highest level	-
Preparing the ground	<ul style="list-style-type: none"> <li>- Mandatory screening criteria;</li> <li>- Clear environmental objectives;</li> <li>- Willingness and attitudes;</li> <li>- Time and resources;</li> <li>- Political influence</li> </ul>	<ul style="list-style-type: none"> <li>- Well defined screening thresholds and criteria/checklist;</li> <li>- Timing;</li> <li>- Tailed methods, time-frame and resources;</li> <li>- Dialogue between proponents, consultants and authorities;</li> <li>- Professional judgment and expertise;</li> <li>- Mandatory requirement with predefined role and responsibility</li> </ul>
Assess and protect	<ul style="list-style-type: none"> <li>- Varying problem perception by opponents and proponents;</li> <li>- Contribution from social scientists;</li> <li>- Expert judgment;</li> <li>- Tailored method;</li> <li>- Scale and implementation of mitigation measures</li> </ul>	<ul style="list-style-type: none"> <li>- Tailored method for prediction;</li> <li>- Expert judgment;</li> <li>- Bias of EIA practitioners;</li> <li>- Taking scoping discussion into consideration</li> </ul>
Wrap it up	<ul style="list-style-type: none"> <li>- Response to issues in scoping;</li> <li>- Coverage of review team;</li> <li>- Mandatory review process;</li> <li>- Comments from all representatives;</li> <li>- Unambiguous monitoring objectives</li> </ul>	<ul style="list-style-type: none"> <li>- EIA practitioners' experience, competence and subjectivity;</li> <li>- Reflection on issues addressed in scoping;</li> <li>- Review body to be independent from the project proponent;</li> <li>- Evaluation guidelines for review;</li> <li>- Resources for monitoring;</li> <li>- Time dependency of the actual impact or design change of the project</li> </ul>
Post-EA	<ul style="list-style-type: none"> <li>- Adaptive management;</li> <li>- Open stakeholder cooperation;</li> <li>- Transparent framework;</li> <li>- Accountability</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of monitoring data to keep track of the project;</li> <li>- Long-term effect could be too early to show up when evaluated</li> </ul>

**Table 4.7** Comparison of SEA and EIA stage factors (Zhang et al., 2013a, b)

Some factors can be found as general factors in both SEA and EIA (Table 4.8), and are all well-known critical factors in environmental assessment, e.g. timing, integration, legal framework, time and resources, cooperation and networking. SEA also shows its strategic nature through some of these general factors. Tiering is identified as crucial for SEA with regard to its position in the decision-making hierarchy. In addition, more abstract notions are found in the description of factors in SEA, especially in the first group ‘communication and understanding’. It is pivotal to understand the concept of SEA to acknowledge the different interests, ambitions, and the uncertainty of SEA process, as well as to be willing to explore and learn. For EIA, by contrast, more concrete elements are present as crucial in this group, such as good quality of an Environment Impact Statement, guidelines of EIA.

The proportions of the notions of stage factors and general factors show a marked contrast between SEA and EIA. In SEA only 24% of critical factors are stage factors and 76% are of a more general nature, whereas the number of notions of stage factors is almost equal to the number of general factors in EIA. This is discussed in Zhang et al. (2013b) from two perspectives. Firstly, SEA deals with more strategic issues with a broader scope targeted at a higher level in the decision-making hierarchy, involving more general elements than in EIA. Therefore the coverage of critical factors determining SEA’s performance is more of a broader concern to assure its function strategically, leaving some detailed elements to EIA through the tiering process (Zhang et al., 2013b). Secondly, the articles selected for the review for both SEA and EIA were published in the first decade of the 21st century. It is hypothesized that SEA and EIA are at different stages of development that could have an influence on the data sources and the results accordingly (Zhang et al., 2013b), which needs further exploration.

<i>Groups</i>	<i>SEA general factors</i>	<i>EIA general factors</i>
Communication and understanding	<ul style="list-style-type: none"> <li>- Understanding SEA concept</li> <li>- Communication and interaction between different stakeholders</li> <li>- Uncertainty of SEA</li> <li>- Acknowledge other interests and ambitions</li> <li>- Openness and willingness to explore</li> <li>- Transparency and simplification</li> </ul>	<ul style="list-style-type: none"> <li>- Dialogue between authorities, developers and the public</li> <li>- Transparency and openness</li> <li>- Good quality of Environment Impact Statement</li> <li>- Theoretical understanding of EIA</li> </ul>
Resources and capacities	<ul style="list-style-type: none"> <li>- Appropriate timescale, money and resources</li> <li>- Competence of the SEA team</li> <li>- Empowerment of planners</li> <li>- Capacity to enforce SEA and engage with stakeholders</li> <li>- Educate politicians on environmental issues</li> </ul>	<ul style="list-style-type: none"> <li>- Keep up timelines</li> <li>- Efficient and effective use of resources as well as resource allocation</li> <li>- Competence and experience of EIA actors</li> <li>- Adequate education and training to promote stakeholder empowerment</li> <li>- Tailored/adapted methods</li> </ul>
Timing and organisation	<ul style="list-style-type: none"> <li>- Early integration of SEA into policy-making process</li> <li>- Cooperation and networking between planners and SEA practitioners</li> <li>- Leadership for a multidisciplinary SEA team</li> <li>- Institutional support and legal framework</li> <li>- Tiering of plans and programmes</li> <li>- Flexible and adaptive procedures and techniques</li> </ul>	<ul style="list-style-type: none"> <li>- Early integration of EIA into decision-making</li> <li>- Cooperation and networking between different agencies</li> <li>- Legal regulation and guidelines of EIA</li> <li>- Institutional framework</li> <li>- Flexibility</li> </ul>
Will and trust/attitude	<ul style="list-style-type: none"> <li>- Sufficient political will</li> <li>- Accountability and more value-driven approach</li> <li>- Trust among stakeholders</li> <li>- Organisational commitment</li> <li>- Learning motivation</li> </ul>	<ul style="list-style-type: none"> <li>- Political will</li> <li>- Bureaucratic intervention</li> <li>- Value neutrality, bias, trust</li> <li>- Respect the opinions of consultees</li> </ul>

**Table 4.8** Comparison of SEA and EIA general factors (Zhang et al., 2013a, b)

#### **4.4. Towards a common understanding of effectiveness**

To answer how EA effectiveness is researched in terms of critical factors, the evolution of the concept of effectiveness is investigated from a historical point of view in Christensen et al. (2012). The authors aim to investigate the basis on which to evaluate effectiveness, by what dependent variables it is determined, and leading to what kind of results (Table 4.9). In the early stage, quality is a pervading term for evaluating EA results with reference to best practice criteria or principles. Criteria-based evaluation is used to examine to what extent it meets the pre-defined standards following the checklist in the review package, and how far the EA procedures are in compliance with the established provisions and rules, leading to the quality of an Environment Impact Statement or good performance of an EA process (Lee and Colley, 1990).

Procedure-based evaluation is refined later as procedure effectiveness by Sadler (1996) but complemented with a goal-oriented evaluation, which is to check if the EA process achieves its objectives. This is understood as substantive effectiveness, which is used in much follow-up research. It is criticised and expanded to cover a broader concern as the EA process embraces the dynamics and interaction with a variety of organisations and stakeholders, which leads to a process effectiveness that is beyond the following procedures. The difference between the two is argued by Christensen et al. (2012), who hold that substantive effectiveness relates to the explicitly formulated goals (environmental or sustainable) and process refers to more tacit goals (creating consensus, organisational survival, etc.). To evaluate the efficiency of the process, transactive effectiveness is employed to see if the environmental assessment is fulfilled with minimal time and cost (Sadler, 1996).

In a broader sense, effectiveness can be examined by taking the EA implementation outcome as the dependent variable; this is elaborated by Cashmore and his colleagues (2008) to cover learning outcomes, governance outcomes, development outcomes, and attitude and value changes. Accordingly, transformative effectiveness is introduced to refer to the direct and indirect effect produced by EA to make changes not only to the decision-making process but also to the wider society around us.

Based on	Determined by	Leading to
Criteria	Best practice criteria, principles, conditions	Quality
Procedure	Established provisions and legislation rules	Procedure effectiveness
Goal	A set of objectives and goals	Substantive effectiveness
Process	Factors and elements	Process effectiveness
Efficiency	Time and cost	Transactive effectiveness
Outcome	Performance	Transformative effectiveness

**Table 4.9** Causation between input and output of EA implementation

The distinction between the different dimensions of effectiveness is not absolute. A new concept is invented, introduced and becomes popular, and then evolves with a shifted focus as time passes (Christensen et al., 2012). It is also noted by Christensen et al. (2012) that the concept of effectiveness is wrapped up in overlapping definitions and used in a sweeping manner with only semantic differences.

Moreover, the use of the concept lies in the individual's understanding and views, with personal interpretation based on different assumptions. When communicating through language, people often talk past each other with new terms or concept pump up, as Fish observes "when one interpretation wins out over another, it is not because the first has been shown to be in accordance with the facts but because it is from the perspective of its assumptions that the facts are now being specified. It is these assumptions, and not the facts they make possible, that are at stake in any critical dispute" (Fish, 1980, p. 255). In the environmental assessment research, it seems scholars have never agreed upon the assumptions underlying the concept of effectiveness and the dependent variables it is based upon. The plurality of effectiveness means the understanding remains non-cumulative due to the ambiguous and confusing theoretical basis of the concept.

The search for other models that describe what determines the effectiveness of the SEA implementation has further proved that our understanding of factors needs to be cumulated (Christensen et al., 2012). To condense the multitude of

ways of talking and distill the meanings of the concepts is essential. To build upon the work undertaken in Zhang et al. (2013a, b), the study further proposes that it has the potential to synthesise the common elements from different models to be mingled into more comprehensive concepts, as shown by Christensen et al. (2012).

Nevertheless, the plural and non-cumulative understanding of effectiveness reflects its diversity and the multifariousness of the ways of knowing. It is essential for the research on effectiveness to open up and embrace relevant topics at the initial stage of development. The thing to keep in mind, as I have argued before, is the varied and distinct assumptions made whenever effectiveness is discussed. Whenever a new term on effectiveness is introduced, it is crucial to build upon the understanding of previous concepts to capture the nuances of thought and specify the assumptions in order to cumulate our knowledge.

#### **4.5. Summing up**

To recap, this chapter has summarised the main findings from articles one, two and three with a focus on the critical factors of SEA, EIA in the search for a common understanding of effectiveness. The functions of critical factors differ in terms of where they play a role and have an effect. The study makes distinctions between stage factors and general factors, depending on whether they influence a specific stage or the system generally. The division between stage and general factors is not impermeable, as they always share some common features in both SEA and EIA. One factor may function in relation to both specific stages and the whole implementation process, and whether it belongs to stage or general factors depends on where the notion of the critical factor is found in the text. Mapping these factors requires interpretation, distillation of meaning and abstraction in the choice of naming factors, all of which involves personal subjectivity and bias.

In terms of the methodologies used in the literature, most research is based on general knowledge, and it is seldom attributed to in-depth case study and theoretical foundations. Besides, notions of general factors are found in SEA three times more often than in EIA. It could be understood that the focus in SEA is more general in nature; or that one is accustomed to talk in general ways, treating specific issues as if they are general. Moreover, the literature selected



for review in both SEA and EIA is mostly from the past decade, when SEA and EIA were perhaps at different stages of evolution, which would influence the result.

The criticism of the multitude of ways of using effectiveness, underlined in different terms, hurdles the cumulative understanding. The assumptions behind effectiveness are plural, with ambiguous and confusing theoretical bases. In examining effectiveness, coupled with both the stage and the general factors determining it, the model developed in Zhang et al. (2013a, b) takes as its starting point the aim of showing the potential to concretise the different definitions used in the field, and cumulates our understanding of effectiveness empirically and conceptually.

Throughout the chapter, the analysis of the stage factors and general factors determining SEA and EIA effectiveness is undertaken based on the comprehensive implementation model. It looks into the EA implementation process from a top-down perspective with the critical factors driving it. A point that arises is how the key implementers, namely the EA practitioners who are present in almost every arena, play a role and have an influence on decision-making. This is of interest both as a critical factor with a bottom-up perspective in EA implementation and also as an under-researched theme in studies on effectiveness, which I will take as a point of departure in the next chapter.

## **5. The influence of SEA practitioners and their discretion**

This chapter focuses on the empirical work on SEA implementation at the front line with a bottom-up perspective, aiming to answer the third research question, regarding how the practitioners' role and their discretion influence SEA implementation. It is expected that SEA will be integrated into planning and decision-making. SEA practitioners can play a crucial role to build the linkage during the implementation process so that SEA has an influence and can thus be effective.

However, there are different ways in which SEA practitioners can work, which is also emphasised by many bottom-up scholars in terms of the discretion that front-line workers possess, as I discussed in chapter three. To understand the role of practitioners more deeply, the empirical study takes its point of departure from Lipsky's SLB theory to sketch the challenges that practitioners are confronted with and their potential coping strategies. The theoretical lens is then brought to the case study to help understand practitioners' behaviour in implementing the measures proposed in the SEA report on the Copenhagen Spatial Plan 2009, taking a critical view. The Copenhagen case study gives insight into some of the supporting or hindering factors that frame practitioners' behaviour as the main concern, and helps to understand the discretion they possess in particular (Kørnøv et al., 2012). Inspired by SLB theory, I consider discretion as crucial for practitioners' performance. The empirical findings, emphasizing the positive role of practitioners' discretion for SEA implementation, are explored further and discussed theoretically. The case shows a greater concern with positive aspects of discretion, and I therefore continue the chapter to understand theoretically the different dimensions of discretion and how discretion has an influence in EA context.

### **5.1. The SEA case of the Copenhagen Municipal Plan**

The case is on the SEA of the Copenhagen Municipal Plan 2009 (hereafter 'the Plan'). The mandatory municipal plan is a spatial plan and the main plan determining spatial development and land use. It comprises three main parts required by the Planning Act (2007): a general structure, guidelines for land use and a framework for the content of the local plans. The plan has a timescale of 12 years and covers a wide range of issues including land use, energy

consumption, climate change, human health, etc. The content of the municipal plan required by the guidelines is shown in Table 5.1.

- 
1. Urban growth and summer cottage areas
  2. Location of various urban functions
  3. The structure of retail trade
  4. Transport installations
  5. Technical installations
  6. Polluting enterprises requiring special siting
  7. Projects requiring environmental impact assessment
  8. Noise protection
  9. Recreational facilities and allotment gardens
  10. Especially valuable agricultural areas
  11. Afforestation areas
  12. Wetlands
  13. Nature protection areas
  14. Valuable cultural environments
  15. Valuable landscapes
  16. Valuable geological assets
  17. Use of watercourses, lakes and coastal waters
  18. Coastal zone
  19. Implementation of national planning directives
- 

**Table 5.1** Content of municipal plans (Ministry of Environment, 2007, p. 19)

Copenhagen, the capital of Denmark, has experienced growth in terms of both citizens and work places. This is reflected in the 2009 plan, in which 45,000 new Copenhageners and 35,000 new work places are planned for the period to 2025 (Copenhagen Municipality, 2009). This growth is one of the five challenges identified in the municipal plan. The other four are: increased growth of traffic, segregation between areas in the city, losing terrain in relation to other larger cities such as Stockholm and Oslo, and new development down to the sea requiring new public transport. The Municipality of Copenhagen expresses a clear vision concerning “the thinking metropolis” in which development and thoughtfulness go hand in hand, with sustainability being a core value.

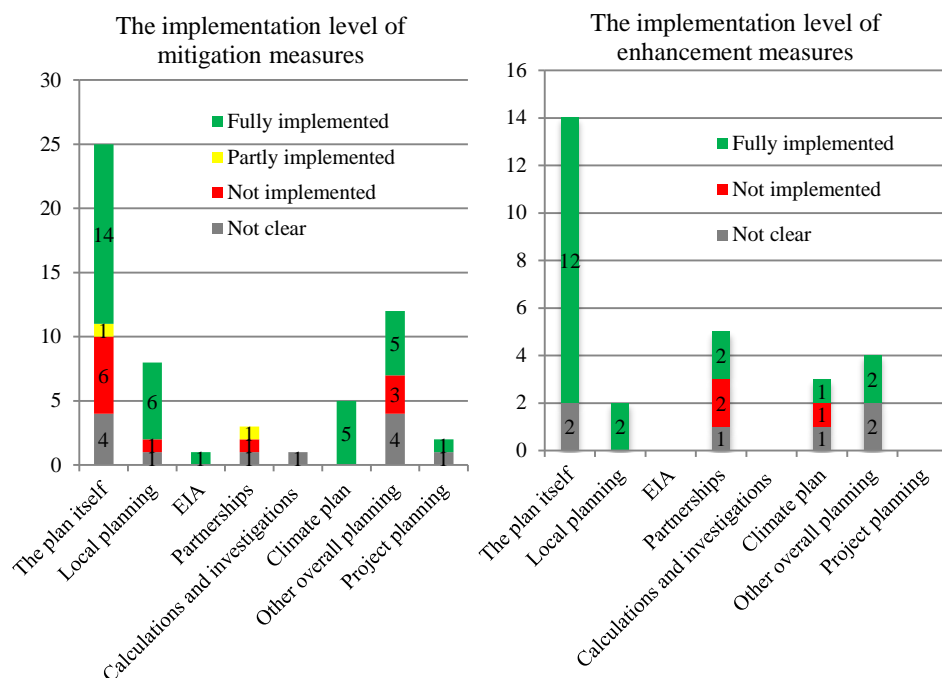
The municipal plan is compulsorily subject to strategic environmental assessment and should follow Law nr 936 on the environmental assessment of plans and programs. The SEA of the Plan has some unique characteristics. First, it enters into the planning process when all that exists is the planning strategy. This early integration has a crucial role in the performance of SEA. Second, there are 46 mitigation measures and 24 enhancement measures proposed in the

SEA report, covering seven themes based on the environmental objectives. Thirdly, for each measure, it is stated clearly where it should be implemented with relevance to other plans. Besides, the SEA process engaged with a broad range of stakeholders, politicians, co-workers from other departments and NGOs to make a contribution.

## **5.2. The role of SEA practitioners: an empirical case study**

The case takes a point of departure from Lipsky's theory of street level bureaucrats (SLBs), which sets the hypothesis on which factors influence SLBs' behaviour and how SLBs cope with the challenges they are confronted with. The street level bureaucrats investigated in this study are the urban and environmental planners who possess the power to decide how to implement an SEA and translate SEA results into concrete action (Kørnøv et al., 2012).

The study examines what has and has not been implemented in terms of the 70 measures proposed in the SEA report and the underlying reasons. The implementation of these measures shows a high dependence on other planning activities such as local planning, the climate plan, project planning, etc. This makes it a potential challenge to implement the measures in terms of the prolonged chain of implementation (Hupe, 2011). By contrast, the measures show a surprisingly high level of implementation, as 74% of the mitigation measures and 79% of the enhancement measures are either fully or partly implemented (see Figure 5.1). The planners' reflection upon this good performance highlighted the following four aspects (Kørnøv et al., 2012):



**Figure 5.1** The implementation level of mitigation measures and enhancement measures (Kørnøv et al., 2012)

1. The early integration of the SEA into the planning process plays a supportive role in securing implementation. The responsibility for implementing the SEA is clearly defined in the SEA report and shared by different working groups in the municipality, which paves the way to a well-organised process to interact with planning activity.
2. The objectives set in the SEA remain in compliance with the overall political objective and strategy, which assures the political commitment and engagement with different sectors and organisations in the implementation process. Working on well-accepted problems makes SEA focused and objective-led.
3. The well-tiered planning system secures and supports the inter-dependence between different levels and types of planning activity.
4. The project-based organisation culture strengthens the connection between different departments and makes internal cooperation easier. It further improves knowledge sharing and mutual understanding through formal and informal contacts between planners to facilitate the process.

The study also magnifies the discretion practitioners possess, which plays a positive role in supporting their performance. They acknowledge the shortage of time and resources and proactively cope with it. They exercise the discretion they possess as an advantage to engage with their work. They show a highly critical and self-reflective consciousness of their working environment, and make an effort to integrate SEA and planning and learn from it. Externally, the flexible organisation culture and political commitment have facilitated their exercise of discretion to be innovative as problem-solvers. This contrasts with the behaviour of the SLBs described by Lipsky, with embedded negative attitudes to shirking, avoiding and escaping complexity during work, as discussed in section 3.1.3.

SLB theory	Copenhagen case
Role strain of SLBs embedded into the institutionalization	Role-conscious planners being highly self-conscious of the limited time and resources
Discretion as a barrier to implementation	Discretion as an advantage to implementation
SLBs develop routines and borrow these routines from each other	Planners try to be innovative and break the routines to be problem-solvers
Internally intimate to simplify decision process	Internal commitment to decisions they have made
Escaping and avoiding, embedded negative attitude	Self-reflective and critical, really want to deeply explore and understand the situation, open to criticism of their planning system
Restricted and never satisfactory working environment	Largely satisfied with their work environment and the progress they have made

**Table 5.2** Comparison of the SLB theory and case findings (Kørnøv et al., 2012)

The behaviour of the SEA practitioners in this case study could be perceived from the following two aspects. The practitioners themselves possess the

professional knowledge and the capability to understand the concept of SEA and acknowledge its value. This motivates them to be constructive to frame the process of integrating SEA into planning. In the same vein, they keep a critical attitude and remain conscious of the problem and aware of their own roles in it, being open to potential solutions and alternatives (Schön, 1983). An example is that they try to be realistic in setting priorities to cope with the political ambition, and take other initiatives closely relevant to the one addressed in the regulation. In this sense, they play the role of reflective practitioners dedicated to exercising their discretion.

From the external environment in which they are placed, the SEA practitioners work in a flexible environment with a tradition of project-based working culture. It is easy and natural for them to formulate sub-units of working groups led by clearly distributed tasks. Practically, they work at the interface and span the boundaries of two or more organisations, departments and professional fields (Noble and Jones, 2006; Steadman, 1992). The practitioners interpret the administrative regulation and the strategy at the municipal level and mediate between them. Besides, to collaborate with people from different institutions with diverse backgrounds, they also need to be capable of acknowledging diverse attitudes, perceptions and arguments, to bridge tensions and conflicts in order to make their task manageable (Aldrich and Herker, 1977). Consequently, the flexible working environment merits boundary-spanning activities and makes deliberative collaboration possible, which further facilitates their innovation during work.

The findings from this case study, together with some other theoretical understandings of the profile of practitioners discussed above, shed some light on the positive side of discretion, which Lipsky's SLB theory cannot explain. Nevertheless, this does not mean that the SLB theory is not relevant, as the finding is based on a best-practice case from Denmark, in which the explanatory role of SLB theory can be confined.

Therefore our perception and knowledge of discretion should be adapted (Kørnøv et al., 2012). There are different ways for SEA practitioners to exercise their discretion and have an influence. The next section proceeds with a theoretical understanding of the different dimensions of discretion and how they are embodied in the role of practitioners in implementing EA.

### 5.3. Further reflections on practitioners' discretion

The Copenhagen case directs attention to the positive side of practitioners' discretion in contributing to EA effectiveness. I have analysed in the preceding section the variety of ways in which practitioners can exercise their discretion. Zhang et al. (2013c) explore further different dimensions of discretion based on a theoretical understanding. The study further maps where discretion comes from in the EA context.

Zhang et al. (2013c) identify four dimensions of discretion (see Table 5.3). Discretion exists at different stages of an environmental assessment. It can have an influence on the input (or the point of departure) of EA implementation (i.e. if the resource needed is available to support an EA process). It is also exercised both over the means (or process) (e.g. how should the impact be assessed) and over the ends (or outcomes) of the implementation (i.e. what mitigation measures should be carried out).

<b>Form of discretion</b> <ul style="list-style-type: none"> <li>- Input (Decide upon if)</li> <li>- Process (Decide upon how)</li> <li>- Outcome (Decide upon what)</li> </ul>	<b>Value of discretion</b> <ul style="list-style-type: none"> <li>- Positive</li> <li>- Negative</li> <li>- Neutral</li> </ul>
<b>Dynamics of discretion</b> <ul style="list-style-type: none"> <li>- Increase</li> <li>- Decrease</li> <li>- Be in balance</li> </ul>	<b>Source of discretion</b> <ul style="list-style-type: none"> <li>- Rule discretion</li> <li>- Value discretion</li> <li>- Task discretion</li> </ul>

**Table 5.3** Framework for dimensions explaining discretion (Zhang et al., 2013c)

On the other hand, discretion can be perceived as negative, positive or even neutral, depending on whether it is exercised in compliance with the goals or intentions (Zhang et al., 2013c). The classification draws mainly on the administrative point of view imprinted in its top-down perspective. It is also relevant to the discussion of whether 'over-exercised' discretion should be supervised, which worries some decision-makers who uphold the accomplishment of policy goals. Making judgment on whether discretion is exercised positively or negatively, it relies very much on which aspect of effectiveness it is aiming for, be it process-oriented or substantive-oriented, as



discussed in section 4.4. Zhang et al. (2013c) also highlighted the dynamics of discretion that changes in accordance with its boundaries and frames that are regulated by legislation, political decisions and social norms.

Concerning the source of discretion in the EA context, Zhang et al. (2013c) emphasise three elements that are implied in the EA literature either implicitly or explicitly. Ambiguous wording and concepts in EA legislation and guidelines leave room for practitioners' interpretation. The general nature of rules and the uniqueness of each case provide further space for rule discretion. Value discretion originates from personal judgment, subjectivity, and the plural understanding of EA effectiveness. Meanwhile, practitioners are also affected by the broad institutional culture and norms, as well as leading values in the community, which conversely influence their perception and ideology. Task discretion is exercised due to the complexity and unpredictability of environmental assessment and the practitioners' ability to carry out the prescribed task.

Discretion is prevalent in the EA process and can be exercised in different ways. It explains practitioners' role and behaviour in EA implementation and their influence on effectiveness. Though the influence is not obvious and straightforward, acknowledging the existence of discretion and sensing the dynamics it brings to the EA process may to a certain extent improve our understanding of the complexity and uncertainty of EA implementation.

## **6. Conclusion**

I have focused on critical factors of EA implementation and the crucial role of practitioners to have an influence in terms of their discretion throughout the analysis in chapter four and five. Here I will build upon the main findings from the preceding analysis to conceptualize the discussion of EA implementation and critical factors determining its effectiveness, considering the theoretical perspectives I addressed in chapter three.

### **6.1. Findings from the empirical work**

As argued in chapter one, effectiveness is a broadly used concept in the EA community, with diffused dimensions and a delimited theoretical foundation to approach and understand it. A variety of terms on effectiveness are invented and used in a sweeping manner without clear distinction or explicit framing between each other, showing a non-cumulative tendency of research. The causation behind EA effectiveness is under-researched and fragmented, especially the lack of system thinking and the understanding of factors determining it. Besides, little attention has been given to the role of practitioners and their discretion in making a difference. The thesis is thus motivated by the following three research questions:

1. What are the critical factors influencing SEA and EIA effectiveness from an implementation perspective?
2. How is EA effectiveness researched in terms of critical factors?
3. How do the practitioners' role and discretionary power influence the SEA implementation?

In one way or another, the three questions have been answered and presented in chapters four and five based on the five articles attached. The emphasis has been on the cumulative understanding of critical factors determining EA effectiveness both empirically and conceptually. As I have said in chapter two on the methodology, this is not a predefined research process. It is a pragmatic choice to set up a research frame that is guided by implementation theory coupled with SLB theory to understand the critical factors and practitioners' behaviour in EA implementation, with attention particularly to their discretion. The first research question has been approached by chapter four together with articles one and two, the review of SEA and EIA critical factors from literature study. To structure the analysis, a distinction between stage factors and general factors is made to cover the different functions of the factors found in the

literature. The stage factors that are closely linked to specific stages are analysed based on the EA implementation model developed from implementation theory. General factors relate to the whole EA process and play a role throughout the process. The division between stage and general factors is not definite, as some factors shows at both places. It can be seen that EA implementation is a complex and dynamic process with a variety of factors driving it at different levels, whether stage-related or of a more general nature. On the other hand, SEA and EIA share some characteristics as some stage and general factors are present in both of them. SEA and EIA are from the same family that assists in decision-making; therefore SEA has inherited some features from its predecessor EIA. The proportion of the notions found between stage factors and general factors is in sharp contrast in SEA and EIA, which explains further the different levels at which SEA and EIA are placed in the decision-making hierarchy.

The second research question was investigated based on the synthesised understanding of critical factors and article three. Effectiveness is discussed with various assumptions, whether goal-oriented, normative research, process-based or outcome-based. The concept is wrapped up with overlapping meanings and terms. Effectiveness, coupled with the understanding of stage and general factors, shows the potential to go beyond semantic distinction to synthesise a common understanding.

The third research question is analysed in chapter five, based on articles four and five. The case study shows a high implementation level of the measures proposed in the SEA report on the Copenhagen Spatial Plan 2009, due to early integration, tiering, the project-based organisational culture, and the congruence between planning and political objectives. Practitioners exercise their discretion positively to be reflective and proactive, which shapes a contrast with the SLB theory. Discretion shows its positive side and can be exercised in many different ways. Four dimensions of discretion are explored further with an emphasis on how they function in the EA implementation process. Discretion is seen everywhere in EA. Rule discretion, value discretion and task discretion are interlinked and function aggregately during the EA process.

## **6.2. Revisiting the rationale of the research**

The study takes its point of departure from a delimited theoretical foundation in EA research, a fragmented understanding of what determines or drives EA effectiveness, and an under-researched bottom-up focus on practitioners' role and their discretion in implementing EA. To cumulate the understanding of effectiveness, this research makes an effort to employ the decision-making theories and relevant social science theories to direct the research attention and light the research journey. It is shown that combining theories from relevant disciplines into the EA research can be inspiring, and broaden the scope of the research. Winter's integrated implementation model shapes the lifecycle thinking of the EA implementation process, which extends the EA process to take both pre-EA and post-EA stages into account. As discussed in section 4.1, the pre-EA stage offers the best opportunity to influence the decision-making process and the post-EA stage is the most appropriate for evaluation and learning. Both stages should be taken into account in order to achieve effectiveness.

Implementation theory helps to illustrate a variety of crucial reasons why implementation failure happens, as summarised in section 3.2. EA implementation is also hampered by these factors, such as symbolic EA, unattainable perfect implementation conditions, and discretion of EA implementers. In one way or another, these reasons are reflected in the critical EA factors identified in this study. Theory is used here not to provide an answer to the problems; rather it structures the understanding, provides a framework for the analysis, and reshapes the knowledge cumulatively (Forester, 1993).

Understanding of critical factors at both stage and general level is necessary to cumulate both the previous empirical work and our knowledge on effectiveness conceptually. The distinction between stage factors and general factors signifies the different functions of critical factors in the EA implementation process. The concept of effectiveness is further fledged with critical factors driving towards the influence on decision-making.

To acknowledge the practitioners' role and their discretion in implementing EA it is beneficial to understand the dynamics and uncertainties of the EA process in order to cope with it. Effectiveness cannot be discussed without considering the flexibility that goes beyond the original 'expectation', to a large extent due

to the discretion embedded in the EA implementation process and exercised by practitioners in many different ways. So to speak, our “expectation” and perception of EA effectiveness should be adjusted, adapted and updated in accordance with the dynamic exercise of discretion and the context therein.

### **6.3. Looking beyond**

Nevertheless, the study hasn’t touched upon EA implementation at the inter/intra organisation level, as is shown in Winter’s implementation model. Related to this, the boundary-spanning role of EA practitioners is to a certain extent an under-researched area. The study opens up some future research options to focus more on how environmental assessment is implemented among organisations and the critical factors that determine it, and relevantly, how practitioners exercise their discretion to span boundaries in this process. Further, this research did not manage to define the difference between general factors and contextual factors and their respective ways of functioning, which certainly merits further understanding in the research agenda.

Moreover, the theoretical basis of EA research could be strengthened by taking relevant social science theories into consideration for cumulative understanding. The EA research on effectiveness not only needs diversity and plurality, but also hopes for a developmental path, from building upon each other’s empirical work to conceptualising the understanding of EA effectiveness, and further moving towards the theoretical cumulativeness of effectiveness, which conversely could guide the practical EA implementation process.

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## **Papers**

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## Review of critical factors for SEA implementation

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### ABSTRACT

The implementation process involved in translating Strategic Environmental Assessment (SEA) intention into action is vital to an effective SEA. Many factors influence implementation and thus the effectiveness of an SEA. Empirical studies have identified and documented some factors influencing the implementation of an SEA. This research is fragmented, however, and it is still not clear what are the most critical factors of effective SEA performance, and how these relate to different stages of the implementation process or other contextual circumstances.

The paper takes its point of departure in implementation theory. Firstly, we introduce implementation theory, and then use it in practice to establish a more comprehensive model related to the stages in the implementation process. Secondly, we identify the critical factors in order to see how they are related to the different stages of SEA or are more general in character. Finally we map the different critical factors and how they influence the overall results of an SEA.

Based on a literature review, we present a comprehensive picture of the critical factors and where they are found in the process. We conclude that most of the critical factors identified are of a more general character influencing the SEA process as such, while only one out of four of these factors relates to the specific stages of the SEA. Based on this mapping we can sketch a picture of the totality of critical factors. In this study 266 notions of critical factors were identified. Seen at the level of notions of critical factors, only 24% of these relate to specific stages while for 76% the critical factors are of a more general nature.

These critical factors interact in complex ways and appear in different combinations in different stages of the implementation process so tracing the cause and effect is difficult. The pervasiveness of contextual and general factors also clearly suggests that there is no single way to put SEA into practice. The paper identifies some of the critical factors for effective SEA implementation, but further research is still needed to conclude which factors are more critical than others, just as the contingencies on which they depend are not easy to unravel.

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### 1. Introduction on critical factors and SEA implementation

Both the Strategic Environmental Assessment (SEA) system and its implementation have been investigated and reported in the literature in recent years, and so have the challenges of making a successful and effective SEA. The implementation process of an SEA influences its effectiveness, and involves processes that are highly complex, being affected by internal as well as external factors. In recent years a growing number of publications have focused especially on effectiveness. Still there is no clear and comprehensive definition of SEA effectiveness itself, just as the causes behind effectiveness are often drowned in a sea of complexities be they contextual or appearing in the process itself (Jay et al., 2007). Furthermore, factors influencing the SEA process and outcomes often have been connected to the whole process and not the individual – and very different – stages of which it consists. The general impression is that effectiveness and

the factors influencing it are still vaguely understood (Van Buuren and Nooteboom, 2009).

The concept of effectiveness may be divided broadly into substantive effectiveness (whether it achieves its purposes) and procedural effectiveness (whether it is undertaken according to the established expectation) (Sadler and Verheem, 1996), as well as transformative effectiveness (Cashmore et al., 2004) focusing more on neglected and unintended changes in society from the SEA process. Even today the definition of the term effectiveness is still too plural to be agreed upon. The procedural aspect has dominated discussions, due to the fact that its predecessor EIA was from the outset highly rationalistic by nature which in turn narrowed down the understanding of effectiveness (Cashmore et al., 2004). No matter what kind of SEA effectiveness we take as a starting point, we need to be able to define what a critical factor is and where in the process it might play a role. The effectiveness we focus on is mainly the direct environmental effectiveness (Stoeglehner et al., 2009) that leads to changes in planning and decision making. It can thus be said to encompass both substantive and procedural effectiveness, while transformative effectiveness seems

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to be of another, more fluid, nature for which it is difficult to identify critical factors.

As stated, the research on critical factors influencing SEA implementation is fragmented. Our literature review also indicates that the terminology used to define SEA factors is ambiguous, and has different interpretations in different contexts. The definitions or vocabulary are difficult to distinguish, as different terms such as 'factors', 'criteria', 'principles' and 'conditions' are commonly used. In this paper we refer to the mechanisms that influence SEA both positively and negatively as 'factors' influencing whether SEAs make an impact on decision-making processes. Extensive research has been undertaken on different factors and how they influence the performance of SEAs, but besides the imprecise use of language to describe these factors, the relationship between key factors and the SEA implementation process is still sparse.

So how can analysis of critical factors contribute to our understanding of SEA effectiveness? Firstly, the diversity of factors we identify and analyse helps us to deepen our understanding of the substantive purpose of SEA, which is still highly debated and challenged by the different expectations for SEA held by people with diverse interests and values (Heinma and Pöder, 2009). As long ago as 1996, Sadler and Verheem gave the following well-received definition '... to ensure environmental considerations and alternatives are addressed as early as possible and on a par with economic and social factors in policy, plan or programme development' (Sadler and Verheem, 1996, p. 26), the objectives of SEA are nevertheless often ambiguous as they are not always mutually compatible and may be defined differently by groups of people with mismatching or even contradictory value frames (Elling, 2000; Thérivel et al., 2009). Secondly, as the objectives of an SEA are adapted during the process of negotiation and compromise, which is the very nexus of SEA itself, it makes it even more difficult to establish the objectives of SEA and thus precisely determine the gap between the expected and actual output of an SEA (Wallington et al., 2007). Identifying the critical factors thus also tells the story about the implementation of SEA, which we hope will clarify some dynamics which hitherto have not been included in SEA research. Thirdly, mapping the critical factors provides us with an understanding of where to spot the weak or even missing links of the implementation process, or where implementation is influenced by street-level bureaucrats or other stakeholders (Kornøv and Thissen, 2000; Stoeglehner et al., 2009). Defining critical factors thus can also help us to identify best practice. Last but not least, analysing the factors can be done at different levels, be it an analysis performed on a specific stage of the SEA process, or one or a number of reviewed cases, or even at the level of the whole SEA system, hopefully leaving us with an understanding of SEA that adds to the existing knowledge, both practical and theoretical (Sadler and Verheem, 1996).

## 2. Research methodology

A broad range of factors that can influence the success of SEA implementation has been discussed in the literature, and our research takes as its starting point the factors that have been identified as important by other scholars, i.e. mentioned in their works. The next step has been to define the SEA implementation process, so that critical factors can be connected to one or more of these stages.

### 2.1. Critical factors

The principle of identifying important factors has a point of departure in the management literature, and was proposed by Daniel (1961) as "critical elements" and "non-critical elements" of a business and as an important basis for determining information needs of managers. The term, "critical success factors", was later used by Rockart, defined as "areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation" (Rockart, 1979, p. 85). Saraph et al. (1989) viewed them as those critical areas of managerial

planning and action that must be practised in order to achieve effectiveness. Critical success factors are and can be applied outside the management establishment – in this case within the impact assessment field. In this paper we use the term "critical factors" which refers to factors that either contribute to or impede an effective SEA implementation. The critical factors are used to analyse and discuss "hot-spots" in the implementation process.

### 2.2. Compilation of critical factors

Through an extensive literature review, we found 30 articles published between 2000 and 2010 that identified one or more critical factors influencing the performance of SEA implementation. These articles were identified through searching bibliographical databases in Scopus. The search was by title based on the criteria that the title must contain the term Strategic Environmental Assessment or SEA, and one or more of the keywords: effectiveness, success of SEA, quality of SEA, factors, criteria and evaluation. These 13 references then provided a basis for using a snowballing technique to identify other relevant references, which is 30 in total at last, based on coverage of geography (containing 11 countries from Europe, and also Canada, Korea, China, South Africa etc.), different contexts and jurisdictions to make the source of data diverse.

The articles analysing critical factors are based on empirical or theoretical work or both. The empirical sources are further based upon different numbers of cases, indicating differences in research methodology and validity. In this study, the following distinction is used:

Primary sources are based on:

- Single case study (S)
- Double case study (D)
- Multi case study (M)

Secondary sources are based on:

- General knowledge based on expert experience, interviews and questionnaires (G)
- Theoretical research (T)

The sources based on empirical material primarily refer to in-depth case studies of one (S) or more cases (D&M). Of a lower validity we find articles based on general knowledge (G) and finally purely theoretical research (T) could also be found in principle.

The comprehensive literature review has involved extensive note taking – highlighting references to critical factors. The critical factors analysed were either theoretically or empirically argued as *conditions*, *criteria*, *principle*, *factors* or other elements of relevance for SEA implementation. We name the factors related to the whole SEA system and the implementation process more generally as "general factors" and "stage factors" if they are related to specific stages in the SEA implementation process.

Those articles containing reference to factors that could affect "effectiveness" or "implementation" are said to have a "notion of critical factors". These were then analysed in more depth for the purpose of combining the identified factors to the stages of the implementation process or using them in our analysis of "general factors".

The next step in the research process was to discover categories or groups of factors, and name them. In many cases, the selected category name was chosen from the pool of concepts presented in literature. It must be borne in mind that some of the names of the factors are thus broader definitions than are found in the individual studies, although the differences most of the time are of minor importance as they only relate to a difference in wording. Our methodology in this regard has been to follow the actual wording of the authors and then by induction distill the factors at a reasonable level that is neither too concrete nor too abstract for them to have meaning in the research community addressing this kind of research.

Finally, the notions of critical factors were all linked to either the group of factors that could be related to the different stages in the implementation process, or condensed to broader groups of “general factors”.

### 3. Implementation theory

Conducting an SEA involves certain steps that the process should undertake in order to transform societal goals – taking care of the environment, or contributing to sustainable development – into decisions made on how to change a plan or a project. During the process many factors influence how the process goes and what the results of the SEA will be. Many different factors critically influence the process, be they political or regulatory factors, knowledge of people involved, the interest of stakeholders, or influences from the wider culture of the society in question. Looking at the SEA as an implementation process can help us to define the exact places in the process where different critical factors play a role for the outcome and effectiveness of the process. We formulate a model of the SEA process inspired by implementation theory and reflecting the steps that an SEA normally goes through. Looking into other schools or other kinds of decision-making theory we supplement the well known SEA stages with stages inspired by a more traditional policy life-cycle perspective (Hill and Hupe, 2002).

Implementation theory has since its birth in 1970s (Pressman and Wildavsky, 1973) lead to different theories describing how policies are transformed into changes of our social, economic and environmental living conditions (Sabatier, 2007). The theory formulated in the 1980s often emphasised top-down processes (Sabatier and Mazmanian, 1980) looking into the process from the policy level, often arguing that obstacles on the way from policy to results should be identified and removed. Later on more emphasis was placed on bottom-up processes emphasising that different stakeholders involved in the process have a legitimate right to follow their interest (Lipsky, 1980), within certain frames, of course. Alternatively, politicians – the formal decision makers of society – have the legitimate right to change the rules of the game within certain frames, set primarily by the constitution.

Several models for implementation have been proposed. At the conceptual level it has been proposed that a model should contain a range of different steps policies normally take – including:

- 1) The policy process where political discussions lead to compromises, i.e., goals for the societal development. This often takes place in the parliament or other local or regional bodies of representative democracy, but most often also involves different stakeholders.
- 2) The policy design, which is the goals, administrative procedures, regulatory institutions, complaint procedures, appointing organisations to execute the decisions etc.
- 3) Within the frames set-up in the policy design, one or more organisations making the decisions (state agencies, municipalities, independent bodies or even private companies) transform political goals into concrete actions like making a SEA.
- 4) The last organisational step in the process where the administrative body makes a decision that is handed over to the target group or persons might lead to some changes in the decision, depending on how the bureaucrats and the target group handle the situation (Lipsky, 1980).
- 5) Finally the target group transforms the policy to changed practices either by changing behaviour or investing in new technologies – or eventually they do nothing, or only do it insufficiently, thus leading to an implementation failure.

This more comprehensive model of the implementation process can be used to establish the flow from a policy to its execution. This is not enough, however, if one wants to investigate the critical factors influencing the quality and effectiveness of a SEA process. In order to

establish such a picture it is necessary to add more theories to describe what is going on in these different steps of the process. Inspired by Christensen and Daugaard-Jensen (2009), and also Pressman and Wildavsky (1973), we adopt the concept of arenas. We thus envisage the implementation process as a row of arenas where the policy is formed at the political level and then consecutively handed on from one arena to the next, from its formation to its final execution by the target group. Inspired by institutional theory (Scott, 2001), each arena has some institutional rules that define who is allowed to take part in the activities in that arena as well as rules for how to make decisions. The concept of arena is a very strong heuristic concept that provides a firm methodological foundation for organising the empirical material from an implementation study in delimited space and time entities. At each arena – each step in the implementation of a policy – the overall goals are concretised until finally – at least in theory – it is implemented according to the initial ideas. But very often it doesn't work that way, because others have had the power to change the policy, or maybe the results were not easy to anticipate in the first place.

One fundamental finding in this theory is also that the implementation process is to some degree determined by external factors – contextual factors – that influence the process as well as its outcomes (Winter, 2003). Implementation problems seem to have many roots and normally these are addressed through a changed policy design especially when politicians want to formulate more specific goals or determine in more detail how the whole process should be handled. The solution is often to apply clearer goals, limit discretionary power, and choose the right organisations and better instruments. There are limits to this, especially because the goals formulated can never be precise, and especially not in a democracy where different parties need to find compromises. In order to be less precise, “round” or fluffy words are often used, so the politicians can agree on the text but actually have different versions of what they exactly cover (Baier et al., 1986; March and Olsen, 1989). Hence discretion will always be there because most of the words we use for formulating policies are exactly of that kind. Another argument against “improving” policy design is that more elaborate rules lead to more bureaucracy and in the end suboptimal solutions.

#### 3.1. Implementation framework for analysing SEA

Based on these reflections on the implementation process we establish an analytical framework that makes it possible to analyse the factors influencing implementation at its different stages (arenas). The task is fairly simple because SEA/EIA was so rationalistic at the outset that a long range of procedural steps have already been laid down in the laws and guidance. Already from the outset back in the 1960s it was a rationalistic framework that was favoured for EIA and this also continued with SEA when implemented in the 1990s (Fischer and Seaton, 2002). Taking the rationalistic models as a starting point we rely on the procedural steps formulated in many text books (Kørnøv and Christensen, 2007), see Table 1. The traditional SEA procedures are complemented with some extra steps in the process, inspired by political theory and environmental management systems leading to a more comprehensive model presented in the middle column of Table 1. Furthermore we have added public participation as a separate stage in accordance with some scholars (Elling, 2000; Nielsen et al., 2005) as this gives us a more condensed picture of the importance of public participation in all the models.

The traditional procedure is seen in the first column, a more comprehensive model in the middle column, and the heuristic arenas used in this study, is found in the third column. Public participation is added as a stage of its own.

Compared with the numbers of critical factors we identify in our study and how well the stages fit together logically we define a heuristic set of arenas, which gives a sufficient number of critical factors

**Table 1**  
Implementation models containing the stages of SEA.

The traditional SEA procedures	Our comprehensive model	The heuristic arenas
–	Agenda setting	Pre-SEA
–	Initiation/deciding to decide	
–	Policy/plan formulation	
Screening	Screening	Preparing the ground
Scoping	Scoping	
Identification of alternatives	Identification of alternatives	
Prediction and evaluation	Prediction and evaluation	Assess and protect
Mitigation	Mitigation	
Public participation	Public participation	Public participation
Documentation and hearing	Documentation and hearing	Wrap it up
Review EIS	Review EIS	
Monitoring and follow-up	Monitoring and follow-up	
–	Application and implementation	Post-SEA
–	Feedback and evaluation	
–	Policy/plan maintenance, succession, termination	

to work with. The six arenas according to which we organise our empirical findings can be seen in the third column in Table 1.

In each of the six arenas we look into how the critical factors are influenced by filters and institutional set-up and eventually propose how the conditions in the individual arenas could be changed in order to improve effectiveness.

In our analysis we identified two levels of factors that are important for the implementation of SEA. Firstly, we found a range of factors that could be analysed as attributed to individual stages of the SEA, named “stage factors”. Secondly, a range of factors could not be attributed specifically to individual stages but only to the whole process as such and these are called “general factors”. Both types – stage and general factors – are analysed in the following two sections.

#### 4. Stage factors of SEA implementation

This section discusses the factors that have been found to be critical to SEA implementation and which can be related to any specific arena as listed in Table 1. Among these critical factors are also included factors related to public participation. These factors are often relevant for more than one of the arenas, so instead of having a sub-category in each of the five arenas called “public participation” we have chosen to group it together.

In order to analyse critical factors with linkage to the implementation process systematically, five heuristic arenas are investigated. These are:

- The pre-SEA stage (includes agenda setting, initiation/deciding to decide and policy/plan formulation);
- The SEA stage “preparing the ground” (includes screening, scoping, identification of alternatives);
- The SEA stages “assess and protect” (includes prediction, mitigation);
- The SEA stage “wrap it up” (includes documentation, review EIS and monitoring);
- The post-SEA stage (includes application and implementation, feedback and evaluation, policy maintenance, succession or termination).

Besides these five arenas, public participation is, as mentioned, analysed separately as a process potentially present in all stages but at least always manifest in some of the stages.

In the 30 analysed articles we have identified 65 notions of “stage factors”, of which 41 relate to specific stages and 24 to public participation.

#### 4.1. Pre-SEA stage

We found just one article on this pre-SEA stage (Sheate and Partidário, 2010). Sheate and Partidário underlined that “political commitment is very crucial” (p. 281). Looking more closely into the material we found that many other articles dealt with this perspective on commitment (e.g. Hildén et al., 2004; Unalan and Cowell, 2009; Zhu and Ru, 2008). But in most cases where commitment is touched upon it applies more broadly to several or all of the stages and is thus categorised as a general factor. It seems obvious that prior to the SEA stage commitment is an important factor but it covers a lot of other aspects, like feeling ownership of the instrument, getting involved in the process as early as possible, and feeling trust in the potentials of the SEA process based on familiarity and the fact that the process is backed up by existing legislation and early discussions on the projects and its impacts (“pre-scoping”). Commitment thus evaporates and becomes instead a range of other practices that are more general in nature and thus analysed below.

#### 4.2. Preparing the ground – screening, scoping and alternatives

This phase includes the traditional stages of SEA; screening, scoping, and identification of alternatives. Although this part of SEA is a very important arena we identified just 18 notions of critical factors from 10 different articles, cf. Table 2. Only one article deals with screening (Liou and Yu, 2004) and the discussion seems to only address the classical discussion on mandatory list contra case-by-case assessment. For the scoping stage (six notions) vague and inadequate environmental objectives seems to be a major problem (d’Auria and Cinnéide, 2009; Fischer, 2010; Hildén et al., 2004). Among these the balance between environment and socioeconomic well-being is also mentioned (Dusik and Sadler, 2004; Wang et al., 2009). For many it was accordingly found that the scope of SEA was generally far too extensive, with a large unmanageable number of issues, objectives and indicators (Retief et al., 2008). Also regarding alternatives we find that the frames are wide. Many alternatives can be imagined and there is no clear guidance on how the assessment should take place. The baseline is often not clearly described, and it is difficult to define “reasonable alternatives” (Sheate and Partidário, 2010). There is also an unwillingness to add new alternatives to those already existing (Runhaar and Driessen, 2007). But often also the discussion of alternatives has a positive role to play, easing the pressure from “NIMBY-attitudes” (Van Buuren and Nootboom, 2010). The discussions on alternatives are fairly open consultations but of course limited by shortage of resources and time (d’Auria and Cinnéide, 2009). It is often found that the political level has some influence by exerting pressure to create or ignore potential alternatives (Runhaar and Driessen, 2007; Van Buuren and Nootboom, 2009).

**Table 2**  
Contribution of articles, notions of critical factors and sources of knowledge for the six stages including public participation.

	Pre-SEA stage	Preparing the ground	Assess and protect	Public participation	Wrap it up	Post-SEA stage
Notions of critical factors	1	18	10	24	7	5
Number of articles	1	10	8	13	4	1
Single case	–	1	–	1	1	1
Double case	–	1	1	4	2	–
Multi case	1	3	2	3	–	–
General	–	5	5	5	1	–
knowledge						
Theoretical research	–	–	–	–	–	–

#### 4.3. Assess and protect

This phase includes the traditional stages of SEA prediction and mitigation. Although this part of the SEA is a very important stage we only found ten notions on critical factors from eight articles commenting on it directly, and only one of these dealt with mitigation. The use of models is important in prediction. Some models are favoured by opponents and some by proponents. The varying problem perceptions should be taken into consideration (Van Buuren and Nootboom, 2010).

As prediction is full of uncertainty expert judgement plays some role in deciding what kind of impact should be addressed and which should be ignored, and “this reliance on judgment may well be an intrinsic and unavoidable characteristic of SEA” (Thérivel and Walsh, 2006, p. 669). Tailored methods for prediction are often not found, and what then becomes neglected is social impacts like health impact (Fischer, 2010; Zhu and Ru, 2008), cumulative impacts (Thérivel et al., 2009), predictions in land use planning (Zhu and Ru, 2008) and shortcomings when it comes to satisfactory identification and evaluation of positive and negative impacts (Fischer, 2010).

Only one article touches specifically on mitigation, which deals with the scale and likely implementation of mitigation measures – are they as likely to be implemented as the policies causing the negative impacts? (Thérivel et al., 2009).

#### 4.4. Public participation

As mentioned above we found that public participation was relevant for many of the stages previously mentioned and this is especially well known for EIA (Christensen et al., 2005; Kørnø et al., 2005). Public participation will thus be treated as a cross-cutting activity. We identified 13 out of the 30 articles that were relevant from this perspective, and 11 of these were also part of the literature used for the specific stages.

One of the most important factors that determines the success of the SEA is targeted communication and the skills to provide this (d'Auria and Cinnéide, 2009; Sheate and Partidário, 2010; Thérivel and Walsh, 2006). In general public participation should not be too limited and an expansion of public participation from 30 to 60 days was found to be a success factor (Sheate and Partidário, 2010). In another case it was found that if too much time was set aside for consultations the public response could be limited (Runhaar and Driessen, 2007).

Involvement of stakeholder representatives should occur as early as possible in the process (Hildén et al., 2004; Runhaar and Driessen, 2007; Van Buuren and Nootboom, 2009), and as many stakeholders as possible should be consulted. Creating an extensive publicity programme raises environmental awareness and also encourages participation from all sectors of society.

Political will to initiate and use SEA could be stimulated by proper timing of the participation process and establishing a network of stakeholders at an early stage (Hildén et al., 2004). Such networks should be publicly announced early in the process and should be open for newcomers (Hildén et al., 2004; Van Buuren and Nootboom, 2009). Stakeholders should express their views during the process as well as afterwards (Song and Glasson, 2010).

The activities and methods used during the public participation are more successful if they are targeted and intensive (Thérivel and Walsh, 2006). Of course the availability of time and resources are important, but also that public participation is based on mandatory procedural requirements is a critical factor influencing public participation and thus also the final effects of the SEA (Runhaar and Driessen, 2007; Sheate and Partidário, 2010; Tao et al., 2007; Wang et al., 2009; Zhu and Ru, 2008). Low ecological and environmental awareness can also be a problem as the lack of enthusiasm leads to solutions that directly or indirectly jeopardise the future health and

living environment of the people who would be affected (Wang et al., 2009).

#### 4.5. Wrap it up

This phase includes the documentation and review of the SEA process as well as monitoring. Here we found four articles commenting on it directly, leading to seven notions on critical factors. Documentation is crucial for a good SEA. It is underlined that returning to scoping to see if the issues addressed there are documented is important (d'Auria and Cinnéide, 2009). Furthermore the way the assessment findings are presented could stimulate the political will to initiate such procedures in the future (Hildén et al., 2004).

For the review of the Environmental Impact Statement it is underlined that as many relevant experts as possible should be allowed to comment on the case (Unalan and Cowell, 2009), but a review process – mandatory or not – could also reinforce perceptions of the quality (Van Buuren and Nootboom, 2010). Anyway the review of EIS would be more convincing if not only experts and authorities but also representatives of all relevant agencies and the public are invited to provide comments (d'Auria and Cinnéide, 2009; Van Buuren and Nootboom, 2010). Monitoring was only mentioned in one case, which underlined that unambiguous objectives will lead to more focused monitoring (d'Auria and Cinnéide, 2009).

#### 4.6. The post-SEA stage

SEA feedback and evaluation have recently attracted more and more focus in the literature. In this review we found only five notions from one article specifically on feedback and evaluation (Gachechiladze et al., 2009). This article concluded that adaptive management is important in general to start feedback and specifically it is important that scoping also addresses the role of follow-up.

#### 4.7. Summary

We found that 16 articles out of the 30 addressed critical factors in one or more of the six general arenas that we use to represent the whole SEA process in sequence.

In Table 2 below, we have compared the different phases regarding the number of contributions to each arena as notions of critical factors and the number of articles for each. Furthermore the articles are subdivided according to their use of primary or secondary sources of empirical data.

As can be seen from Table 2 the pre- and post-SEA stages are under-researched, so in a certain sense our expansion of the traditional stages was not worthwhile. However, from these stages there might exist some important links to general factors, as well as bridging of gaps between society at large, or what Cashmore et al. (2004) in another context called transformative potentialities causing other more subtle effects in society.

There are 65 notions of stage factors found in the 30 scrutinised articles. The sources of information are mainly from multi-case investigations or merely relying on general knowledge, i.e., the empirical bases are relatively weak as the main bulk of information is general and repetitive in nature. A minority of research is carried out in cases targeting just one or two cases, where it can be expected that the researcher has gone deeper timewise as well as in choice of methodologies.

Looking more closely at the number of stage factors we can see that there are huge differences between the different stages. In Table 3 the exact number of notions is presented for each stage defined in our “comprehensive model”. As can be seen there are surprisingly big differences found here. Screening and scoping, which are often the focus of research, are not reporting many stage factors, and the same goes for mitigation. The preparing of the “SEA



**Table 3**

Number of stage factors for the different stages that we have investigated.

Our comprehensive model	Number of stage factors
Agenda setting	–
Initiation/deciding to decide	1
Policy/plan formulation	–
Screening	1
Scoping	6
Identification of alternatives	11
Prediction	9
Mitigation	1
Public participation	24
Documentation and hearing	2
Review EIS	4
Monitoring and follow-up	1
Application and implementation	–
Feedback and evaluation	5
Policy/plan maintenance, succession, termination	–

report” (documentation and review) as well as monitoring are also stages where we only identify a few critical factors. Contrary to this we find much more focus on concrete critical factors when it comes to stages like alternatives, prediction and public participation. These latter three relate to more active phases where the public in general are more involved and show more activity, in contrast to stages like screening, scoping and prediction where the initiative lies with the authorities or developers and their consultants.

## 5. General factors influencing the success of SEA

Some factors cannot be attributed to one or a few stages but relate to the whole process of SEA. They thus describe more complex phenomena but are also more condensed in the literature and thus fewer in number. The reason for this is either that the factor is influencing the whole process or that the authors just talk very broadly about such factors without discriminating between whether they relate to one or more stages or maybe the whole SEA as such. Besides this we also face the problem that many of the factors described can be characterised by very different words referring to different levels of aggregation. Two sentences describing a factor can be on different levels of abstraction and not necessarily represent the same level, thus in a situation like that we can have only one factor but described at two different levels. Normally we find a tendency for the researcher to attempt to distill (by induction) the content of such a description of many rather concrete phenomena to fewer more abstract descriptions. As time goes by the description of phenomena will thus be distilled.

In the preceding section it was manageable to group the wordings of the phenomena described, as they were reflecting more concrete activities and anyway could always be related to the stages in question. The critical factors identified are grouped into four main categories and in all it was found that 29 of the 30 selected articles contained notions of factors that applied to the general level of the SEA.

In the following, the four broad categories will be defined and different aspects of them will be presented. We found that it was difficult to find single terms – solitary concepts – covering a whole group of phenomena. Instead we have chosen two words that describe fundamental aspects of each category which may be said to enlighten each other and thus give a deeper understanding. This process was also from the bottom-up and has been through some distillation before it found its final form. One mid-point result is presented in Table 4 together with the final (provisional) form.

### 5.1. Communication and understanding

As one of the broader categories “communication and understanding” can be subdivided into four sub-categories representing different aspects thereof. In the first subgroup, covering 30 notions, the emphasis

is on the importance of understanding the SEA concept, conceptualising it, and in a broader sense also having the ability to learn new things, methods and techniques. Acceptance of uncertainty connected with knowledge is also part of this picture.

The importance of communication and interaction between different stakeholders is widely demonstrated as important for SEA implementation, as communication and interaction creates acceptance of the SEA and values its results (Runhaar and Driessen, 2007; Sheate and Partidário, 2010; Tao et al., 2007; Wang et al., 2009). Plans that are too abstract, however, can of course contribute to a lack of communication and coordination that will constrain implementation (Unalan and Cowell, 2009) and slow down the process of knowledge transfer (Sheate and Partidário, 2010). Differences in interpretation will limit effectiveness (d'Auria and Cinnéide, 2009), while understanding and acceptance creates spaces for knowledge brokerage (Noble, 2004; Sheate and Partidário, 2010). Such interaction and transparency increases actors' common understanding of environmental issues (d'Auria and Cinnéide, 2009).

Some planners see SEA as “more of the same”, while on the other hand some with a traditional hard science background find it difficult to curb their scepticism (Bina, 2008; Hilding-Rydevik and Bjarnadottir, 2007). Developers view SEA as an administrative burden, while some locals see it as an instrument for resolving problems related to, for example, compensation (Song and Glasson, 2010). Environmentalist may see it as a bureaucratic procedure with no practical influence (Song and Glasson, 2010). In many places there is a slow change in the perception of the environment (Bina, 2008; Dusik and Sadler, 2004) or to the contrary that too much emphasis is put on the environment (Thérivel et al., 2009). Sometimes it is the other way round, where practitioners fail to address the environmental consequences (Dusik and Sadler, 2004) or are outvoted in the final decisions (Stoeglehner, 2010). In general, though, it is often found that SEA practitioners themselves have a very weak understanding of strategic decision making and limited appreciation of the political context (Retief, 2007). In Taiwan it was found that the competent authorities are unfamiliar with using the SEA concepts (Liou and Yu, 2004) and the same goes for China, where there is in general a lack of appropriate information (Zhu and Ru, 2008).

Uncertainty about SEA is a central problem as it can lead to barriers to effective SEA implementation (Tao et al., 2007). The assessment

**Table 4**

Showing the inductive route from small groups of closely connected notions of critical factors that are finally condensed into four final groups with a much broader coverage.

Inductive subgroups	Groups at higher level	Final four groups
Understanding of SEA (30)	Communication and understanding (57)	Communication and understanding (57)
Acknowledging interests (8)		
A broad approach to SEA (11)		
Transparency and simplification (8)		
Time (6)		
Money (4)	Time and resources (19)	Resources and capacities (34)
Resources (9)		
Practitioner capability (15)	Timing and organisation (71)	Timing and organisation (82)
Integration (15)		
Timing (18)		
Networking (19)		
Institutional framework (9)		
Tiering (7)	Explicit legal framework (11)	
Flexibility (3)		
Explicit legal framework (11)		
Will and trust (28)	Will and trust (28)	Will and trust (28)

methods used should be further developed and the SEA reports should better reflect the relationship with sustainable development through relevant indicators (Song and Glasson, 2010; Wang et al., 2009). Often indicators and goals are found to be conflicting or over-lapping (Dusik and Sadler, 2004), but in other places this might be interpreted as frameworks established that allow a national style with discretionary power to flourish (Hilding-Rydevik and Bjarnadottir, 2007).

The results of the SEA are also shown to be dependent on those involved in the assessment itself – the SEA practitioners. It was found that the plan is most likely to change if both consultants and several people from the local authorities are involved.

The second subgroup of “communication and understanding” focuses on acknowledging other interests and ambitions and covers eight notions. Here it is underlined that SEA helps to form joint visions and the close involvement in the process provoked participants to reflect on their own frames (Van Buuren and Nootboom, 2010). The receptivity of decision makers thus plays an important role (Noble, 2004). Participation leads to obligation to take results seriously as they are derived from the participants’ own inputs and thus foster policy learning and consensus building (Van Buuren and Nootboom, 2010). If agreement on the need for an SEA is lacking, or the SEA findings are not taken into account and acted upon, it will constitute a barrier to effective implementation (Noble, 2004; Théritel et al., 2009).

The third part focuses on the importance of a broad approach to SEA and willingness to explore, but also that the results of SEA are eventually accepted (Runhaar and Driessen, 2007; Van Buuren and Nootboom, 2010). This sub-category is based on 11 notions of critical factors. Openness to data and data quality should be taken seriously (d’Auria and Cinnéide, 2009). Willingness to explore is also willingness to balance between different kinds of information (Hildén et al., 2004), which flow should go vertically and horizontally and be flexible and fast, so interaction and reflection will be facilitated (Van Buuren and Nootboom, 2009). But it is also important that no confusion exists on who takes the lead in the SEA process (Bina, 2008). Limitation in target areas (Song and Glasson, 2010) is a problem, although it is expected that SEA can address matters outside the strictly delimited area of use (Retief, 2007).

The fourth part of “communication and understanding” focuses on the role of transparency and simplification and counts eight notions. Transparency in the decision-making process puts pressure on decision makers and thus increases their political will to initiate the process (Hildén et al., 2004; Theophilou et al., 2010). SEA should be kept simple and pragmatic in order to be transparent (Elling, 2000; Retief, 2007; Théritel and Minas, 2002), as lack of transparency leads to limited openness and participation (Bina, 2008) and that fosters a resistance against unwelcome facts (Van Buuren and Nootboom, 2009). Planning based on sound information makes the choice of values transparent and establishes clear rules for deciding on the significance of environmental impacts (Stoeglehner, 2010).

## 5.2. Resources and capacities

The second group of notions covers “resources and capacities” and is based on 34 notions altogether. Time, money and resources are basic critical factors that can be used to restrict participation and the quality of the assessment (d’Auria and Cinnéide, 2009; Sheate and Partidário, 2010; Van Buuren and Nootboom, 2010), so sufficient resources are needed (Noble, 2004; Tao et al., 2007; Theophilou et al., 2010; Théritel and Minas, 2002). Contrary to this, it does not mean the longer the time taken for the SEA, the better the results are. As Song and Glasson showed, a too time consuming SEA can be a barrier to sound implementation and thus perceived as a means for the restriction of development (Song and Glasson, 2010). Leave enough time, start early and plan ahead are frequent advice for those making an SEA (Théritel and Minas, 2002; Théritel and Walsh, 2006). Among the participants the timeframe is often

felt to be more limiting than the budget (Retief, 2007), and for money it was found in some cases that the amount and allocation of money was reasonable (Theophilou et al., 2010). Adequate resource is prerequisite to implement SEA, including human resources (Sheate and Partidário, 2010), financial resources (Noble, 2004; Theophilou et al., 2010), external funding (Retief, 2007) and data (d’Auria and Cinnéide, 2009; Fischer, 2010; Fischer and Gazzola, 2006). A limitation in resources can impact SEA implementation but often it is found that participants like front-line bureaucrats instead focus on routine activities to align the balance between funding and expenses or to minimise the implementation gaps between their working situation and the SEA requirements (Stoeglehner et al., 2009).

It is the competences of the SEA team rather than any one individual who is involved that dictate the influence of an SEA. As Théritel and Minas illustrated, these competences include “independence, objectivity and credibility; breadth and depth of expertise and experience; and the authority to implement the appraisal recommendations” (Théritel and Minas, 2002, p. 87). Training practitioners, including in how to coordinate activities, could be beneficial for the empowerment of planners (Noble, 2004; Unalan and Cowell, 2009), but often we also find that communicative capacities are important (Sheate and Partidário, 2010). Capacities cover many aspects though, like expertise in planning staff and authorities (d’Auria and Cinnéide, 2009), politicians (Hildén et al., 2004), lack of capacity to enforce (Bina, 2008) and to engage with stakeholders (Song and Glasson, 2010), or knowledge of tools that demand professional skills. Competent practitioners are needed (Retief et al., 2008) but it should not be forgotten that a limited societal support base is often a major problem (Liou and Yu, 2004). Deficiencies in practitioners’ training should be identified as this is an important barrier (Noble, 2004).

## 5.3. Timing and organisation

The third group of notions covers “timing and organisation” where timing refers to the orchestration of activities and relates to organisational behaviour and management and the institutional set-up. This group is based on 82 notions and is divided into seven subgroups. In the first subgroup covering 15 notions of critical factors the emphasis is on the integration of activities within the organisation.

A well organised SEA should focus on integration at the system level. This can be seen from several perspectives. Frequently emphasised is integration of the SEA with the policy-making process (Théritel et al., 2009). Other words can be used for the same phenomenon, or perhaps with slightly different meaning: like being “parallel and interacting” (Runhaar and Driessen, 2007); parallel development of planning and its SEA (Theophilou et al., 2010); intertwined processes (Van Buuren and Nootboom, 2009); adaptation of SEA to existing planning procedures (Elling, 2000); or adaptation and iteration of SEA to the planning process (Sheate and Partidário, 2010; Stoeglehner et al., 2009).

Anyway integration implies full integration and that means early integration (Tao et al., 2007), with clear links between SEA and planning (Hildén et al., 2004) and SEA teams working in parallel with the planning process (Dusik and Sadler, 2004). Integration is “an important prerequisite for effective SEA, but by no means guaranteeing for it” (Stoeglehner, 2010, p. 227). Sometimes, though, good timing alone does not necessarily contribute to the quality of the decisions (Van Buuren and Nootboom, 2009).

It is also emphasised that early intervention of SEA into decision making (Wang et al., 2009) facilitates a process of collaborative governance, consensus building and joint fact finding (Van Buuren and Nootboom, 2010). A hindrance for this could be a weak understanding of the decision-making process (Retief, 2007), but hindrance is also reported in creating room for the SEA practitioners to give their input to the development of the strategy (Sheate and Partidário,



2010). There must be room and timing for the SEA to be involved already in the early phases of decision-making (Runhaar and Driessen, 2007; Theophilou et al., 2010; Thérivel and Walsh, 2006). If the feedback from the SEA comes after the first phases of the plan or programme has already been made, it is impossible to influence the plan or programme (Bina, 2008; Hildén et al., 2004) as such changes are not welcomed (Fischer, 2002; Thérivel and Minas, 2002). On the other hand, integration of instruments like the SEA and SA (Sustainability Assessment) may lead to a weakening of the environmental focus (Thérivel et al., 2009).

Looking at the cooperation between the effects of networking and cooperation with stakeholders is also found to impact the effectiveness of the SEA (Fischer and Gazzola, 2006; Noble, 2004; Sheate and Partidário, 2010; Theophilou et al., 2010), so cooperation between planners and SEA practitioners is indeed very important (Hildén et al., 2004). Often the planners are increasing their understanding of environment and sustainability (Thérivel and Minas, 2002). Involving other more independent partners in the process could also improve the results of the assessment (Thérivel and Minas, 2002), and multi-disciplinary teams may be beneficial (Fischer, 2002; Tao et al., 2007; Van Buuren and Nooteboom, 2009). Here a SEA team leader is often very important not least in communicating with the director of the project (Van Buuren and Nooteboom, 2009), as insufficient communication can be a major problem (Bina, 2008). Nevertheless a range of interactive consultation techniques can be successfully used to solve these problems (Theophilou et al., 2010). Leadership in the process is often parties other than local governments (Song and Glasson, 2010), and in many countries this role is played by the consultancy sector (Retief, 2007).

These considerations also lead to the recognition of the institutional framework as important (Fischer and Gazzola, 2006). The meaning of institutions differs among different theories but here we find notions like establishing effective institutional frameworks (Fischer and Gazzola, 2006) and characterised by structures that co-ordinate and distribute information (Bina, 2008). These institutional frameworks simplify procedures and thus add to efficiency and hence better implementation (Song and Glasson, 2010). In developing countries it is often found that poor coordination (Bina, 2008), bureaucracy (Liou and Yu, 2004), and lack of public participation, as well as complexity and scale (Zhu and Ru, 2008) impede implementation and thus effectiveness. Improvements on the other side are often found in relation to institutional support for environmental values (Runhaar and Driessen, 2007).

A better legal framework could provide a firm basis for effective implementation, including clear objectives and methodological guidelines (d'Auria and Cinnéide, 2009; Fischer and Gazzola 2006; Noble, 2009; Thérivel et al., 2009), mandatory requirement for SEA implementation (Hildén et al., 2004; Tao et al., 2007; Wang et al., 2009), legally binding roles and responsibilities of related actors (Noble, 2009; Van Buuren and Nooteboom, 2010), well defined legal provisions (Noble, 2004; Retief et al., 2008; Tao et al., 2007) and more precise (quantitative) targets (Retief et al., 2008; Thérivel et al., 2009). A more specific policy design is thus asked for by many of the authors.

Another aspect of integration and institutional improvements is identified in relation to tiering of plans and programmes (Hildén et al., 2004). Tiering is the integration between different levels of planning, establishing an overview of plans that are related and describing their interconnections, frames and so on. It is thus a prominent task of SEA to make the framework more explicit and also to inform the lower level activities (Fischer, 2010), for example, simplifying the sub-regional planning by carrying forward SEA results to the next level in a tiered system (Fischer, 2002, 2010). But these connections between different layers can be difficult, not to say impossible, to establish (Retief, 2007) and unexpected effects in other places in the planning system can be expected (Song and Glasson, 2010). A clear delineation of roles and responsibilities is thus a precondition

for good tiering and thus more successful implementation (Hildén et al., 2004; Noble, 2009).

The institutional framework of an SEA and thus also the need to tier decisions at different levels often also leads to the demand for tailoring the techniques and procedures of SEA to the specific context under consideration (Wang et al., 2009). Procedures should be flexible and adaptive to be effective in different contexts. SEA should be used in a dynamic, flexible and adaptive manner (Van Buuren and Nooteboom, 2010), although – contrary to this – one article with Italy as an example reports that “flexibility is likely to serve existing political interests by functioning as an excuse not to change anything” (Fischer and Gazzola, 2006, p. 407).

#### 5.4. Will and trust

Insufficient political will is the most significant barrier to SEA implementation (Hildén et al., 2004; Liou and Yu, 2004; Noble, 2004; Retief, 2007; Sheate and Partidário, 2010; Zhu and Ru, 2008), together with the closely connected concepts of accountability and trust (Fischer and Gazzola, 2006; Runhaar and Driessen, 2007). The core values of stakeholders and other participants should be respected (Van Buuren and Nooteboom, 2010) even though a social struggle is taking place. On the other hand, too strong a will would eventually lead to the opposite effect such as excessive hierarchical top-down thinking (Fischer and Gazzola, 2006), centrally controlled decision making (Zhu and Ru, 2008) and lack of transparency (Fischer and Gazzola, 2006). This could be indicative of deeper-seated beliefs in opponents (Theophilou et al., 2010) or that a general lack of critical assessment, for example, regarding sustainable development, is not addressed in an appropriate way (Thérivel et al., 2009). Politicians might even make the assessment but not implement it (Retief, 2007). Therefore they also have the responsibility for the proper implementation (Fischer, 2002). Focus should then not be so much on technical-rational approaches but more value driven (Retief et al., 2008). A clear and agreed value system eventually leads to transparent and sound decisions (Stoeglehner, 2010).

Trust among the stakeholders involved in the SEA process could promote stakeholder engagement and thus facilitate the benefits of SEA. Trust can thus be the catalyst for making a better SEA, thus playing a positive role for the SEA (Sheate and Partidário, 2010; Theophilou et al., 2010; Van Buuren and Nooteboom, 2010). Hilding-Rydevik and Bjarnadottir (2007) noted that receptiveness to tools is easier to establish when political will, organisational commitment and learning motivation already exist.

We found that 29 articles out of the 30 addressed critical factors of a more general nature. From the many different notions that we could classify as critical factors we were able to group them in four fairly consistent groups. Table 5 shows how many articles contribute to each of the general critical factors and on which empirical or theoretical basis these are propagated. Again we see that knowledge of the

**Table 5**  
Contribution of articles, notions of critical factors and sources of knowledge for the four groups of general factors identified.

	Communicate and understanding	Resources and capacities	Timing and organisation	Will and trust
Notions of critical factor	57	34	82	28
No. of articles	23	19	26	17
Single case	1	1	1	-
Double case	3	2	2	2
Multi case	5	5	7	3
General	11	8	15	10
knowledge				
Theoretical research	3	3	1	2

general critical factors is based on multi-case methodology or even more general knowledge.

Among the general factors described in this chapter many can also be characterised as contextual factors of the SEA implementation. Sensitivity to the context of a system is very important (Cherp, 2001) as it helps identify general factors of an even more distant nature. Many of the general factors are closely linked to the concrete experiences of practitioners and researchers that try to give some generalised explanation of factors influencing the whole SEA process per se. Further analysis will unveil that some of the general factors date back to more constitutive facts of societal life like power, institutional structure and political culture among others. Runhaar proposes that the discourse perspective could be used to understand better how context plays a role in the SEA (Runhaar, 2009).

As an environment management tool developed from Western-style bureaucracy, SEA is doomed to stumble on different barriers when introduced to the cultures and institutional settings of developing and transitional countries. Central power and political will, on the other

hand, could be a determinant force behind a more smooth implementation process in other jurisdictions (Hildén et al., 2004; Runhaar and Driessen, 2007; Van Buuren and Nootboom, 2009). The quest for contextual factors could be highly relevant for identifying even more distant general factors that, although distant, do play a recognisable role in the successful implementation of an SEA.

## 6. Conclusion

In this article we reviewed how effectiveness is understood in the recent SEA literature and how it is being affected by different critical factors. Still there is no clear and comprehensive definition of SEA effectiveness itself, as it is defined as both substantive (achieving its purposes), procedural (made according to established expectation) (Cashmore et al., 2004; Sadler and Verheem, 1996), and process (changes emanating from the organisational life). In this article we primarily look at effectiveness as direct environmental effectiveness (Stoeglehner et al., 2009) as it materialises or influences decision-

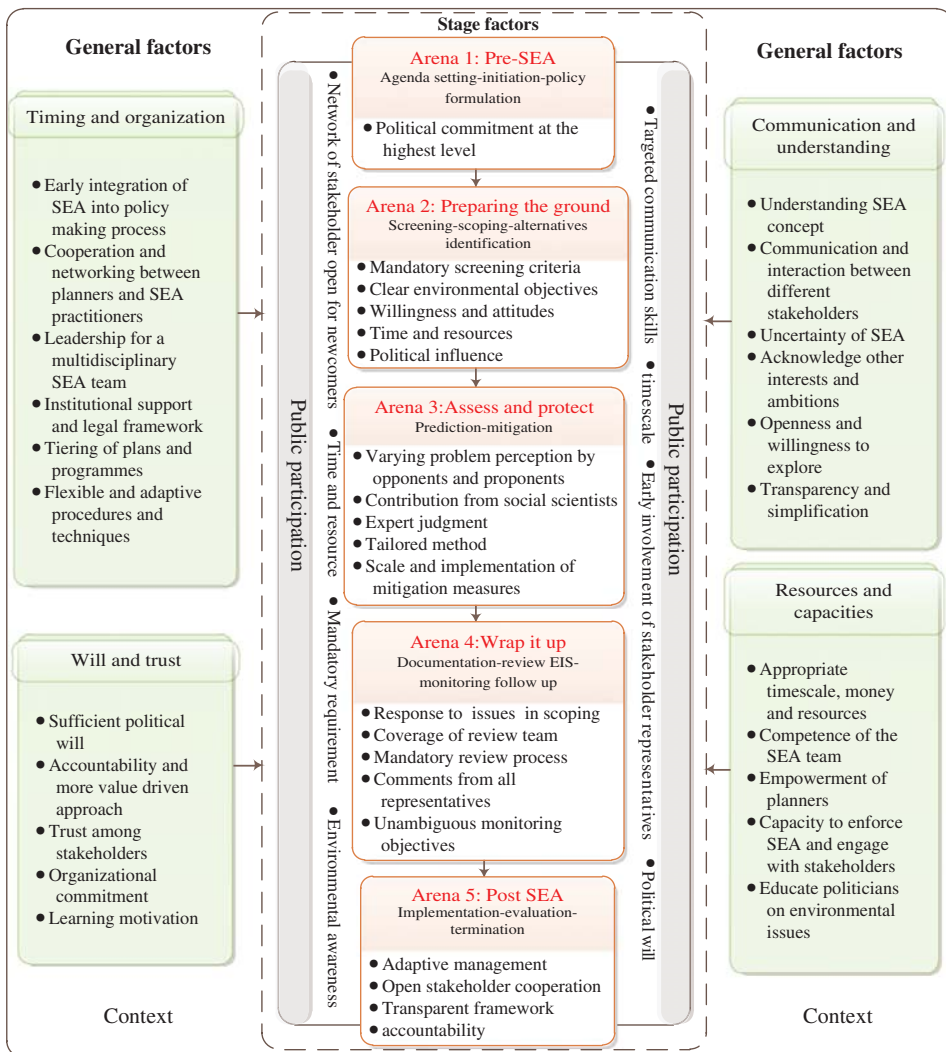


Fig. 1. Visualizing stage factors and general factors for direct environmental effectiveness of an SEA.

making and process-related changes as well. Having delimited the concept of effectiveness this article then sought to define what the critical factors are and where in the process they might play a role. In our review of the critical factors we have identified those found in the 30 articles analysed. Critical factors are just as broad as the concept of effectiveness ranging from very specific factors related to specific stages in the SEA process to broader, more vague, factors related to the general SEA process or even more distant causes like contextual causes related to politics, culture and institutions. We have identified a wide range of critical factors in the 30 articles (Fig. 1). We suggest, based on implementation theory, that these factors should be divided into main groups, either as stage factors that can be related to specific stages in the SEA process or those that are more general in nature referring to factors influencing the SEA more broadly.

Among the 30 articles we found that 18 had proposals for stage factors that influenced specified stages of the implementation model presented in Table 1. We identified 65 specific mentions of such factors including what was found for the factors related to public participation ( $N=24$ ).

For the stage factors, we divided them according to the implementation model which provided six stages including the category of public participation, which is specific but often relates to more than one stage, for example, screening, scoping, and public hearing of the EIS. The stages with the most identified critical factors are “preparing the ground” and “assess and protect”. In ten articles we identified 18 factors related to “preparing the ground” and in eight articles 10 notions on “assess and protect”. The 65 notions of critical factors identified cover many different notions on critical factors. The analysis demands that an interpretation is made that in an inductive way groups these notions of critical factors into still more encompassing “labels”, ending up with a very few groups of phenomena.

The results of this analysis on stage factors can be seen in Tables 2 and 3. Based on this analysis we found that 65 notions of critical factors were identified in 18 of the 30 articles. Most often critical factors are found within “alternatives” ( $N=11$ ), “prediction” ( $N=9$ ) and “public participation” ( $N=24$ ). There were surprisingly small numbers of critical factors identified in stages like “screening” ( $N=1$ ), “mitigation” ( $N=1$ ) and “monitoring” ( $N=1$ ), all of which are important stages and thus should be targeted more precisely in a discussion on critical factors.

The stages in our comprehensive model are based on implementation theory and offer a more detailed framework to which to relate findings in the future. In other words, it is our opinion that a grouping of the SEA in different stages including pre- and post-SEA stages should prove to be a worthwhile approach in order to make the research more specific.

It is noteworthy that public participation, together with alternatives and prediction, are the phases with the most critical factors identified. This indicates that these stages are “hot-spots” of SEA and they are most often focused upon in discussions of effectiveness.

For the general factors also we have identified all the notions of critical factors and then interpreted and condensed these to broader categories, and then finally grouped them into four large and broad groups of critical factors (see Table 4). In the 30 articles analysed, only one article addressed specific notions only, 7 articles addressed only general factors, while 22 addressed both. For the 29 articles addressing general factors, we identified 201 notions of critical factors. These have been interpreted and condensed (see Table 4) into 14 groups and then grouped into the before mentioned four groups of critical factors described in Section 5.

In this study 266 notions of critical factors were identified. Seen at the level of notions of critical factors, only 24% of these target specific stages, while for 76% the critical factors are more of a general nature. It would be tempting to conclude, from the material we have, that the research within the field of SEA is still too general. Table 5 also demonstrates that there is little in-depth research but many broad questionnaire-based investigations, as well as many articles based on general knowledge from this field of research.

The question then remains whether this large number of general factors is good or bad. Should they be seen as a lack of concreteness; i.e., too broad discussion of the critical factors where it was hoped that some day the general critical factors would be turned into critical factors related to specific stages of the SEA process? Or should we just expect general factors to be general and thus impacting the entire SEA more broadly?

There is no doubt that both stage and general factors are relevant in explaining the effectiveness of SEA, so this is merely a discussion of where to find the right balance. It is not possible to deliver an answer to that question as research always progresses through phases of generalisation (from specific investigations to generalised knowledge, i.e., induction) to phases of harvesting where generalised knowledge is used to put forward some questions that need to be addressed in relation to specific problems (i.e., deduction). Furthermore new knowledge is primarily harvested through the use of questionnaires, a method that is most likely to be used to ask generalised questions, thus merely reproducing existing general knowledge. Does the SEA research community strike the proper balance between specific and general knowledge? This could relate to at least three different ways of conceptualising the problem.

Firstly, the general factors described could be general because they address specific problems as if they were general, i.e., a factor well known from a specific stage of SEA is addressed as if it were general, not related to a specific stage but to SEA as such. In this case research should try to resolve as many of the general factors into stage factors as possible. Methodologically this means that more qualitative methods probably should be used to investigate experiences at specific stages.

Secondly, general factors can be general in nature, like, for example, “trust”, “will” and “transparency”, which are phenomena embracing all parts of SEA and thus they belong to the category of general factors. These phenomena can be addressed through case studies and other more in-depth methods.

Thirdly, general knowledge can relate to something that is normally expected, that generally happens and so on, without being closely connected to any explicit body of theory. For example, trust is very often pointed to as a general factor, but besides being mentioned and used in its everyday connotations it could have been used in a fundamental meaning, as for example by Luhmann (1999). Thus, this research should be more related to a body of accepted social science that could inform these concepts on theoretical grounds.

What the proper balance is between stage and general factors at the present time is impossible to decide. To the best of our knowledge there is a deficit when it comes to stage factors and an overload of general factors that possibly could be resolved into more stage factors.

### 6.1. SEA as an implementation process

Looking at the SEA process as a genuine implementation process also confirms many of the findings made in this article. First of all it is evident that the characterisation of the implementation process as “governed” by both internal and external forces also holds water for the SEA process. Actually the majority of the identified critical factors were identified as general factors. Our results also confirm that implementation is a process consisting of top-down as well as bottom-up influences. First of all we find that the initial stages on “alternatives” and “prediction” generate the largest number of mentioned critical factors together with public participation which exactly mirrors the importance of bottom-up process also.

The importance of general critical factors also underlines that “context” is a dominant feature for this kind of societal process, where “effectiveness” certainly owes its existence to the fact that many critical factors influence the pace and direction of the SEA process.

The underlining of the initial policy process is also found here (Table 1). General words like commitment and trust and strategic interest clearly indicates that. It is also found that dialogue between politicians and planners takes place at this stage, so the distinction

between policy and planning is blurred anyway. Here it is also worth mentioning that the way politicians interact with planners and the planning process often is to demand a better policy design, which is seen as the key to future success.

The role of organisations, as authorities or as other parties included in the process, clearly affects the outcome of the process. We find these notions both among the critical factors related to the comprehensive model but also among the general factors. Executive organisations play a vital role not least in that a balance should be found between their power to create an output but also that time and resources are provided for. It is expected that these authorities are competent and positive, but lack of resources and time as well as professional competency are potential critical factors. The involvement of other actors is crucial for the success of the SEA process. These might be professional organisations, other stakeholders or the public in general. Also these organisations are expected to be positive – but at least it is expected that the authorities create trust and accountability and formulate transparent frameworks – thus paving the way for a positive dialogue with stakeholders and creating a broader acceptance of SEA.

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## **Critical factors for EIA implementation: Literature review and research options**

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**Abstract:** After decades of development, the gap between expectations of Environment Impact Assessments (EIA) and their practical performance remains significant. Research has been done to identify the critical factors for an effective implementation of EIA. However, this research, to a large extent, has not been cumulated and analysed comprehensively according to the stages of the EIA process. This paper contributes to the critical review of the literature on EIA implementation and effectiveness by cumulating mainly empirical findings in an implementation theoretical perspective. It focuses on the links between different critical factors and how they relate to different stages in the EIA and thus influence the decision making process. After reviewing 33 refereed journal articles published between 1999 and 2011, we identified 203 notions of critical factors. Of these, 102 related to different stages defined in our comprehensive EIA implementation model, and 101 were identified as general factors related to the whole EIA system. The number of notions of stage factors and general factors is thus about equal. An overlap between stage factors and general factors was found, which demonstrates that critical factors function differently in different cases. The function of the critical factors is complex and it is difficult to determine contingencies and causations. In the sources we examined, there is evidently an imbalance between in-depth empirical research and general knowledge, and the paper offers some suggestions for future research.

**Key words:** environmental impact assessment, implementation, critical factors, effectiveness

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## 1. Introduction

Environment Impact Assessment (EIA) has been adopted worldwide in different jurisdictions and everywhere it is expected to have an impact on planning and decision making (Christensen and Kørnøv, 2011; Jay et al., 2007). After decades of development and debate, the gap between high expectations and poor practical performance is still significant (Nykvist and Nilsson, 2009). EIA is sometimes perceived as a bureaucratic add-on, and functions as one of the many unavoidable barriers for a project to be approved (Cashmore et al., 2004; Pischke and Cashmore, 2006). The positive values that EIA brings to the decision-making process are not well recognized, accepted or even agreed upon. One reason behind this is that numerous factors influence how EIA achieves its objective of making an impact on decision-making. Many influences can be identified, including the practitioners and their interpretations based on the ambiguous wording of guidelines and regulations (March and Olsen, 1982), the political will and the willingness of the public to influence the agenda (Christensen and Kørnøv, 2011; Lyhne, 2011), as well as street level bureaucrats innovating in delivering the policy to target groups (Lipsky, 1980).

The challenge of how to make sure EIA has an effect on decision-making has now been on the research agenda for decades. An extensive literature has developed covering different aspects of how EIA is implemented. In contrast with Strategic Environment Assessment (SEA) (Zhang et al., 2013), limited attention has been given to a systematic and comprehensive analysis of EIA critical factors. The factors mentioned in the literature are far from systematically grouped, which leaves the research fragmented and vaguely comprehended especially when it comes to understanding the causation between these factors and their impact on the EIA implementation process (Cashmore et al., 2008). In our research we identify these factors as “critical factors”, referring to factors that either contribute to or impede an effective EIA implementation. Critical factors are addressed in the literature with various terms like “control mechanism”, “core criteria”, “factors”, “constraints”, or other terms that can be hard to distinguish. The “best practice criteria of EIA” are most often used as a common denominator in the checklists based upon which the quality of EIA is defined (Peterson, 2010; Pöder and Lukki, 2011). In evaluations of EIA, the focus has often been on the “quality” of the EIA, primarily addressing procedures for performance and quality of environment impact statements (EIS) and ignoring the relation between EIA procedures and

quality, as well as the contribution to effectiveness of the EIA (Pischke and Cashmore, 2006). The concepts of “constraints” or “control mechanisms” are also often elaborated to approach the interface between EIA procedure and decision-making from different perspectives, such as procedural control and established institutional framework (Kolhoff et al., 2009; Ortolano et al., 1987; Pischke and Cashmore, 2006). The question of what factors influence which particular stages of an EIA’s “life cycle” has not been investigated before, neither has the influence from more general factors as has been studied within the SEA community (Christensen et al., 2013; Zhang et al., 2013).

The lack of consideration for the “life cycle” of EIAs constrains our understanding of the EIA process. EIA is a holistic process following the same path as many other policies. First in the sequence is when EIA is put on the Agenda and it is decided to start the EIA. The EIA then goes through the stages formulated in the EU Directive: from screening to documentation. After deciding on mitigation, EIA is then applied to the project. The project will be executed, and “project maintenance, succession or termination” (Hill and Hupe, 2002, p.6) will take place after it is being monitored and evaluated. All these stages or combinations thereof could be seen as arenas on which the implementation process takes place (Pressman and Wildavsky, 1973) as new proposals are introduced, and existing ones are modified by stakeholders, street level bureaucrats and even the target group in question (Scott, 2001). The arenas formulated in the EIA implementation process will be elaborated further in Section 2 (Zhang et al., 2013). Although it is debateable whether policy can be divided into different “phases” or “stages” (Sabatier and Jenkins-Smith, 1993), the stage model provides powerful lenses that will facilitate our enquiry into “what happens between policy expectations and (perceived) policy results” (Hill and Hupe, 2002, p.2), which is exactly the same definition of a critical factor as we are aiming at.

Effectiveness is a concept which has taken a journey within impact assessment literature especially over the last ten years, and relates to the various expectations of the implementation of impact assessment. In this article we define effectiveness as the direct environmental effectiveness (Stoeglehner et al., 2009), which results in impacts on planning and decision-making.



This paper takes as its point of departure the critical factors which have an influence on the effectiveness of the EIA process and decision-making. In the following we will outline how this study has been conducted and the theoretical framework on which it is based. After identifying stage factors as well as general factors, we map all notions of critical factors in the relevant literature, and this forms the basis for sketching the importance of different factors and where to expect to find them. Finally the paper concludes and identifies areas for further research.

## **2. Research methodology**

In this study critical factors are used to sketch and analyse the “hot spot” of the implementation process. To ensure the systematic study of critical factors, the terms and framework of this article are kept in line with those provided in the article on critical factors in SEA (Zhang et al., 2013).

The first step of the analysis consisted of searching for articles relevant to the topic. The search was limited to peer-reviewed academic journals. Using databases of published work in Scopus, we searched for articles on EIA filtered by key words which included one of the following: “evaluation”, “effectiveness”, “quality” and “system performance”. This produced twelve articles which formed the basis for the further search by snowballing. Finally 33 articles covering the period from 1999 to 2011 were selected as the most relevant for an evaluation of EIA practice. Barker and Wood’s article from 1999 was selected as it is one of the rarely-found journal articles reviewing EIA performance from the late 1990s and is furthermore also often cited in other articles. The selection of articles was also done with a view to ensure a broad coverage of jurisdictions and different contexts.

The articles were categorised into different groups based on whether primary sources or secondary sources are used in the investigated articles. Primary sources entail that it is an empirical study based on cases that can be grouped as follows:

- Single case study (S)
- Double case study (D)
- Multiple case study (M)

Secondary sources are classified as:

- General knowledge based on expert experience, interviews and questionnaires (G)
- Theoretical research (T)

The sources based on empirical material (S, D and M) are viewed as those with the highest validity, followed by general knowledge (G), and purely theoretical research (T).

The next step was to analyse the articles one by one and highlight in the text with reference to factors that could influence effectiveness, which we have termed “notions of critical factor” here. It should be borne in mind that some factors are referred to by synonymous words such as “criteria”, “principle”, “constraint”, “factors” etc., and any other analysis related to or having an influence/impact on decision-making could also be taken into consideration.

The paper takes an extensive analysis of the “notions of critical factors” to group them into different categories. We name the factors that influence the whole EIA system “general factors”, and those related to different stages of the EIA implementation process are termed “stage factors” in the following.

In order to synthesize the EIA process and the implementation stages, a model covering five arenas was introduced. For the sake of consistency with a previous study of critical factors in SEA (Zhang et al., 2013), no major changes have been made in the model, as we see that both SEA and EIA are very close to each other when it comes to the policy implementation process. Finally, the stage factors were linked to different stages based on the EIA implementation model below (Table 1).

After all the identified “notions of critical factors” were classified as either general factors or stage factors, the notions of critical factors are assembled in smaller groups. The name for each group was in most cases distilled from the original wording in the literature. One may approach the same meaning using different wording, or the conception being presented shows a variety of details in different contexts, which required more consideration to choose a name for each category. Our principle is that the name should be neither too abstract nor too specific, and preferentially should be the one most frequently mentioned in the research community.

<i><b>The traditional EIA procedures</b></i>	<i><b>EIA implementation model</b></i>	<i><b>The arenas</b></i>
-	Agenda setting Initiation/deciding to decide Project formulation	Pre-EIA
Screening Scoping Identification of alternatives	Screening Scoping Identification of alternatives	Preparing the ground
Prediction and evaluation Mitigation	Prediction and evaluation Mitigation	Assess and protect
Documentation and hearing Review EIS Monitoring and follow up	Documentation and hearing Review EIS Monitoring and follow up	Wrap it up
-	Application and implementation Feedback and evaluation Project maintenance, succession, termination	Post-EIA

**Table 1** EIA implementation model and arenas

Finally, the notions of critical factors are grouped and named into categories referring to different stages of the EIA implementation process, as shown in Table 1, or linked to different kinds of general factors. The route for the process of grouping the general factors needs some more explanation and will be presented specifically at the beginning of Section 4 and in Table 4.

### 3. EIA stage factors

The notions found in the literature referring to a specific stage of EIA implementation are categorized under the name of each stage. To keep track of “what happens between the establishment of EIA and its relationship with decision making”, pre-and post-EIA stages are also identified and investigated. The factors affecting the EIA stages could be diverse but if they address the same meaning it is distilled under the most commonly used name. Finally all these stages are categorized into five arenas identified in our implementation model which covers:

- The pre-EIA stage (includes agenda setting, initiation/deciding to decide and project formulation);
- The EIA stage “preparing the ground” (includes screening, scoping, identification of alternatives);
- The EIA stage “assess and protect” (includes prediction, mitigation);

- The EIA stage “wrap it up” (includes documentation, review EIS and monitoring);
- The post-EIA stage (includes application and implementation, feedback and evaluation, project maintenance, succession or termination).

Besides these five arenas, public participation is analysed separately since it relates to almost every step in the EIA process.

### ***3.1 Pre EIA stage***

For the pre-EIA stage, no notions of critical factors were identified in any of the 33 articles analysed. Thus it appears that, in contrast to policy process in political science, this is an under-researched field within the EIA community and one that requires more attention. This stage is vague in itself but it could be easily contextualized as how a particular project EIA came into being, or could be addressed as the nature and rationality behind this instrument. EIA has been functioning as a popular permit for the project to be approved because the intention of politicians is to have environmental issues considered in projects, while the developers, on the other hand, regard it as a “bureaucratic hurdle” at their own expense (Cashmore et al., 2004). It could, however, be very interesting to know how the project agenda has been modified at the very beginning of EIA implementation and how the project goals are proposed.

### ***3.2 Preparing the ground***

This arena includes screening, scoping, and identification of alternatives. It is a “hot spot” for EIA research, as we found 29 notions of critical factors relevant to this stage from 16 articles. Among these, 9 notions from 7 articles were related to the screening stage. Screening thresholds and criteria are important. Ahmad and Wood argued that “the effectiveness of the screening stage is increased by limiting the chance of significant types of actions being exempted from the requirement for a scoped EIA” (Ahmad and Wood, 2002, p. 222). A well-defined checklist plays an important role in screening, to avoid spending too much time on small projects with no apparent significant impact on the environment (Christensen, 2006). The terms in the criteria and checklist should be clear and quantitatively defined in case different interpretations are used as an excuse not to do an EIA (Pinho et al., 2010; van Loon et al., 2010). In cases where the threshold or criteria are not explicitly presented, there are opportunities for political will to influence the screening decision (Kolhoff et al., 2009). Timing and dialogue between proponents, consultants and authorities are

crucial to the modification of the project at the very beginning (Nielsen et al., 2005; Kolhoff et al., 2009). Nielsen et al. concluded that screening is not only a filtering mechanism but also effectively a more independent regulatory instrument, as decisions are based on modifying the project proposal (Nielsen et al., 2005).

On scoping we found 19 notions from 10 articles. Lack of tailored methods could be a barrier to “the identification of both indirect and secondary impacts that determine the depth of the EIS” and thus “produce the loss of valuable information for decision making” (Toro et al., 2010, p.256). It is said that early involvement of stakeholders and consultation is helpful to identify the key issues early in the process. This can avoid delays in the following steps and ensure sufficient quality and completeness of the information, which can be provided punctually and adequately. It is crucial for different actors to bring their concerns to the attention of the competent authority and the developer and have them reflected in the terms of reference (Kruopiene et al., 2009; Wood et al., 2006; Palerm, 2000). Snell and Cowell argue that scoping is too early a stage to involve the public, as no fixed proposal has yet been settled. The public could be confused by the uncertainty of project design and use this opportunity to raise objections to the project inappropriately (Snell and Cowell, 2006). Of course time-frame and resources are important, but also scoping should be dependent on professional judgement and the expertise of local authorities, as there is uncertainty over the baseline data, and lack of clarity regarding government guidelines, which are also constraints for effective scoping (Snell and Cowell, 2006; Wood et al., 2006). Last but not least, mandatory requirement of predefined roles and responsibilities is always the precondition for executing scoping (Alemagi et al., 2007; Ogunba, 2004; Snell and Cowell, 2006; Van Loon, 2010).

Only one article touches upon alternatives, mentioning that legislative requirements play a crucial role as “the lack of coverage of alternatives was apparent in a number of Member States and this was explained by the fact that this is not required by the legislation” (Barker and Wood, 1999, p. 393).

### ***3.3 Assess and protect***

This arena covers the traditional stages of EIA prediction and mitigation. Only 5 out of 33 articles were found to address prediction, even though it is a major

part of an EIA, and no notion on mitigation was found. Tailored method is often a bottleneck for forecasting environmental effects, especially as the officially recommended methods are often outdated or unsuitable for the context of a specific case (Kruopiene et al., 2009). Quantitative methods are less often employed in prediction than qualitative methods (Ogunba, 2004). Expert judgement has some influence on whether there is over-prediction or under-prediction, and unequal attention was given to both the beneficial and adverse impacts (Ali, 2007). Bias exists in prediction: “being financially dependent, EIA practitioners are exposed to potential attempts of influence and often become biased” (Kruopiene et al., 2009, p. 308). As the EIA process is dynamic and continuously adapting, scoping discussion could be helpful to improve the accuracy of predictions (Wood et al., 2000).

### ***3.4 Public participation***

Public participation is discussed separately here, as it is present in one form or another in many stages of EIA. It is always a hot topic, as 25 notions from 15 articles were identified. From the public perspective, willingness and capacity are quite important factors for adequate participation with representatives from different stakeholders and interests groups (Cashmore, 2007; Fitzpatrick and Sinclair, 2009; Kahangirwe, 2011; Ogunba, 2004; Palerm, 2000). Public empowerment is necessary if the public is indifferent and not well educated, so as to boost public awareness and inform people of their rights (Kruopiene et al., 2009; Ogunba, 2004).

A supportive environment for well-informed participation is a vital condition that guarantees that mandatory requirements are followed and public hearings are provided (Ahammed and Harvey, 2004; Ahmad and Wood, 2002; Cherp, 2001; Toro et al., 2010). Access to knowledge is also of key importance to the public (Baker and McLelland, 2003; Palerm, 2000). Effective and efficient communication, such as working group deliberations, an information centre, and public meetings are vital for promoting public support (Alemagi et al., 2007; Cashmore et al., 2008).

Timing and timeframe are crucial, as late starting and a too fast process will hinder the input and contribution from the public (Alemagi et al., 2007; Barker and Wood, 1999; Kruopiene et al., 2009; Van Loon et al., 2010). An interesting point that needs to be mentioned is the motivation for initiating public

participation. As Ahammed and Harvey state: “the public participation program aimed at reducing anger and protest of those affected and to motivate them to support the project, but it was not concerned with the public input in the decision making process” (Ahammed and Harvey, 2004, p. 74). In other words, public participation is used as an opportunity for the developers to exercise power and to persuade the public to do what they would like to do, without real consideration of needs and inputs from the public side, which distorts the original expectation for implementing public participation (Ahammed and Harvey, 2004).

### ***3.5 Wrap it up***

This arena includes the traditional stages of documentation, review EIS (Environment Impact Statement) and monitoring. We identified 32 notions from 14 articles. Among these, 10 notions relate to documentation. Open public participation and consulting is identified as crucial to the quality of EIS to “reduce the range of issues prone to conflict in the EIS review phase” (Ali, 2007; Palerm, 2000). The quality of an EIA report is highly dependent on the experience and competence of the EIA practitioner. The practitioner’s subjectivity is also a factor when they act as an advocate of a developer, and thus may “prepare a subjective report in attempt to persuade the council to approve the project” due to their financial dependence on the developer (Kruopiene et al., 2009, p.309). EIS is open for people from different backgrounds, such as local authorities, review experts and also the public, so it matters a great deal to present the findings in a logical and coherent way that can be understood easily (Cashmore et al., 2004). Barker and Wood also found that reflection on issues addressed in scoping is important and has led to the improvement of EIS quality in the United Kingdom, Germany and Belgium (Barker and Wood, 1999).

The EIS review is addressed in 10 notions from 8 articles. Who reviews the EIS is the key question here, as it is influenced by the different backgrounds of the review team. In particular the review body should be independent from the project proponent so that bias is reduced (Ahammed and Harvey, 2004; Ahmad and Wood, 2002; Barker and Wood, 1999; Cashmore et al., 2004; Fitzpatrick and Sinclair, 2009). Alemagi reported from the Cameroon practice that competent and accredited personnel are vital to conduct a rigorous and objective review process (Alemagi et al., 2007). It is also argued by Glasson and Salvador

that it is bureaucratic to take too much time on the EIS approval process, and a time limit is necessary for the EIS review (Glasson and Salvador, 2000). As EIS review is a quality control process, the evaluation criteria, checklist or guidance is crucial to provide a framework of reference and reduce the subjectivity of individual reviewers to a minimum (Ahmad and Wood, 2002; Toro et al., 2010).

On the monitoring stage, we found 12 notions in 6 articles. Resources such as qualified and experienced personnel, as well as financial support, are regarded as the most crucial factors for successful monitoring (Ahmad and Wood, 2002; Androulidakis and Karakassis, 2006; Toro et al., 2010; Wood et al., 2000). Involvement of the local residents as front-line experts in monitoring and follow-up is the key to success, and also communication with the scientists is a driving force behind the successful monitoring of management plans (Slinger et al., 2005). It is reported that some long-term impacts as presented in EIS did not show up when conducting the monitoring, or the project design changed after the EIA, thus monitoring was not possible because of too short time or uncertainties (Wood et al., 2000). It makes a difference whether there is a mandatory requirement for implementation of monitoring and follow-up (Ahmad and Wood, 2002; Ogunba, 2004; Wood et al., 2000).

### **3.6 Post EIA**

The post-EIA stage has attracted more and more attention in the research world. We found 10 notions from 5 articles commenting on this stage. The consideration of mitigation measures in EIS is the basis for issuing conditions in planning permission (Jay et al., 2007). Wende conducted a factor-correlation analysis to test the impact of different factors on the EIA procedure in Germany, and concluded that the three most important factors leading to modification of projects are scoping, the early participation of authorities, experts and third parties in scoping, and the extent to which the analysis of the project's effect is described and analysed in the EIS (Wende, 2002). Often it is found that evaluations are not carried out effectively, and the explanation for that could be lack of monitoring data, as available monitoring data was not related to the EIS or not coherently collected (Kahangirwe, 2011; Wood et al., 2000). Time-frame matters, as it could be too early to predict some of the long-term effects when evaluation takes place (Wood et al., 2000).



### 3.7 Summing up

We found 102 notions of critical factors in 25 out of 33 articles, which are referring to a specific EIA implementation stage. The number of articles and notions of critical factors attributing to each stage are listed in the following table based on their origin as primary or secondary sources.

It can be seen from Table 2 that most of the attention has been focused on “preparing the ground”, “wrap it up”, and “public participation”, and that the pre-EIA stage is under-researched, while the post-EIA stage on the other hand has attracted a great deal of discussion. Attention is given especially to evaluation of the effect of EIA. Concerning the data source of the analysis, general knowledge is overwhelmingly used for most of the empirical data in the articles reviewed, while only a minority of them undertake research based on in-depth case study and theoretical framework.

	Pre EIA	Preparing the ground	Assess and protect	Wrap it up	Post EIA	Public participation
Notions found	0	29	6	32	10	25
No. of articles	0	16	6	15	5	15
Single case	0	0	0	1	0	0
Double case	0	0	0	0	0	0
Multiple case	0	2	1	3	1	3
General knowledge	0	12	4	9	3	9
Theoretical research	0	2	1	2	1	3

**Table 2** Contribution of articles, notions of critical factors and sources of data for the five arenas plus public participation

As we can also see from the traditional EIA stages (Table 3), 92 notions in total have been identified for the stage factors excluding the pre- and post-stages. It is no surprise that scoping, public participation, documentation, review and monitoring are the hot spots discussed by researchers. To the contrary, alternatives and mitigation, which should also be among the focus areas of EIA, are ignored to a certain extent.

Stages of our comprehensive model	Number of notions for stage factors
Agenda setting	-
Initiation/deciding to decide	-
Project formulation	-
Screening	9
Scoping	19
Identification of alternatives	1
Prediction and evaluation	6
Mitigation	0
Public participation	25
Documentation and hearing	10
Review EIS	10
Monitoring and follow up	12
Application and implementation	5
Feedback and evaluation	5
Project maintenance, succession, termination	-

**Table 3** Number of notions for stage factors

#### 4. Analysis of general factors

We found 101 notions from 24 articles (out of 33) on general factors in EIA. These notions do not refer to any specific EIA stages but rather discuss more broadly and generally the whole EIA system as such. In this article it has taken some further effort to distinguish between them as their content is not exactly the same as those we found in the SEA study. Here we adopt a combined inductive and deductive methodology to synthesize our findings. There are many common characteristics between the SEA study and this EIA study. That is why in this study we use the same four groupings as a framework in which the critical factors could fit in, thus being the starting point of a deductive process (Zhang et al., 2013). On the other hand, these 101 notions were distilled and condensed into 17 sub-groups. This bottom-up process is then merged with the top-down process which ends up condensing the 17 inductively formed groups with the 4 groups inherited from the SEA study (Table 4).

Inductive sub-groups	Groups at a higher level	Final 4 groups
Communication and interaction (7)	Communication and understanding (14)	<i>Communication and understanding (14)</i>
Transparency and openness (4)		
Understanding both theory and process (3)		
Timeframe (3)	Time and resource (13)	<i>Resources and capacities (38)</i>
Resource (10)		
Stakeholder empowerment (7)	Practitioner capacity (16)	
Professional EIA practitioners (9)		
Tailored methods (5)	Capacity in a broader sense (9)	
Lack of capacity (4)		
Integration (7)	Timing and organization (29)	<i>Timing and organization (37)</i>
Timing (4)		
Networking and collaboration (10)		
Institutional framework (6)		
Flexibility (2)		
Legal framework (8)	Legal framework (8)	
Political will/power (7)	Will and attitude (12)	<i>Will and attitude (12)</i>
Attitude (5)		

**Table 4** Inductive and deductive routes for grouping the general factors and number of notions

The four big groups were borrowed from the SEA research, as these groups show some identical identities except for some minor details. For example, in the category “communication and understanding”, “understanding both theory and process” are addressed specifically in EIA, while the SEA research engages in more broad discussion such as “acknowledging interests and broad approach in SEA”, but the name of the group will still be “communication and understanding”. For the group “will and attitude” we have chosen this name instead of “will and trust” as it better covers the critical factors identified in the EIA context. This means, however, that there are some small changes in the coverage of the final four groups, compared with the division used in the SEA study (Zhang et al., 2013).

#### ***4.1 Communication and understanding***

The category “communication and understanding” is based on 14 notions within 3 subcategories. Communication and interaction are widely acknowledged as crucial to EIA implementation. The dialogue between authorities, developer and the public could facilitate new knowledge generation and enhance the chances

of project modification (Christensen et al., 2005). It is proved that stakeholder engagement, active public input, consultation with proponents and NGOs, exchange of information between different representatives of interests, and contribution from civil society, all contribute significantly to interaction in EIA, from the experience of countries like Sudan, Canada, Lithuania, Western Uganda, Yemen, and Denmark (Ali, 2007; Ammandale, 2001; Christensen et al., 2005; Fitzpatrick and Sinclair, 2009; Kahangirwe, 2011; Kruopiene et al., 2009; Van Loon et al., 2010).

Transparency and openness are the central problem in EIA implementation, especially for achieving procedural effectiveness (Baker and McLelland, 2003). Any disclosure of information and confined procedure could thus be a barrier for a successful EIA (Ahammed and Harvey, 2004; Annandale, 2001; Cherp and Golubeva, 2004).

It is also underlined that understanding of the key stages in the EIA process, i.e., good quality of the EIS, is the key factor for an effective EIA (Cashmore et al., 2004; Pölönen, 2006). It is not only procedural effectiveness that matters here, emphasis could also be given to the incorporation of theories into EIA which could broaden our understanding of EIA and thus enhance effectiveness (Cashmore et al., 2007).

#### ***4.2 Resources and capacities***

As one of the broadest categories, “time and resources” can be divided into six subcategories, which covers 38 notions from 19 articles. Keeping to timelines and avoiding delays could ensure EIA results being considered in a timely manner, thus influencing the outcome of the EIA (Androulidakis and Karakassis, 2006; Baker and McLelland, 2003; Cashmore et al., 2008). Efficient and effective uses of resources as well as resource allocation are identified as vital to the substantial contribution of EIA to decision making (Cashmore et al., 2004; Fitzpatrick and Sinclair, 2009; Toro et al., 2010). The effectiveness of an EIA could be handicapped by a number of resource constraints concerning insufficient scientific and baseline data, shortage of funds, and inadequate manpower (Ahammed and Harvey, 2004; Alemagi et al., 2007; Ali, 2007; Cashmore et al., 2007; Kruopiene et al., 2009; Ogunba, 2004).

Not only do human resources count, but the competence and experience of EIA actors also matters and plays a key role when implementing EIA. As an adaptive policy system, EIA requires the study team to “form cross-sectorial networks, to critically evaluate and reflect on existing experience, to experiment with various approaches, and to be open to diverse forms of domestic and international knowledge” (Cherp and Golubeva, 2004, p. 127). Qualified experts and competent and trained personnel are concerned, and thus make a vital contribution to an effective EIA (Alemagi et al., 2007; Ali, 2007; Glasson and Salvador, 2000; Kruopiene et al., 2009; Van Loon et al., 2010). Thus adequate education and training to promote stakeholder empowerment is essential to increase the standard of EIA practice and to extend its influence (Ahmad and Wood, 2002; Alemagi et al., 2007; Cashmore et al., 2004; Jay et al., 2007). Ali concurred that “trained manpower is needed in all steps of the EIA process from screening to monitoring and auditing” (Ali, 2007, p.79).

It is generally acknowledged that EIA effectiveness could be improved by tailored/adapted methods as a way to borrow from the international experience and to be innovative to the countries’ context at the same time (Alemagi et al., 2007; Cashmore et al., 2004; Glasson and Salvador, 2000). Lack of capacity widely exists as a common barrier for EIA practice in many jurisdictions (Ahammed and Harvey, 2004; Kahangirwe, 2011; Ogunba, 2004). Which kind of capacity is needed is often vaguely stated, as the word “capacity” is often used in a general sense when referring to organizations or a group of people, which could be more complex considering inter/intra-organizational issues, and this requires more dedicated research.

#### ***4.3 Timing and organization***

This is also one of the broadest categories, with six subcategories including 37 notions in total. To achieve the substantive effectiveness of EIA, the linkage between EIA and decision-making plays a crucial role in the extent to which EIA can make a difference (Amandale, 2001; Cashmore et al., 2004; Jay et al., 2007). Seven notions are identified as being related to this factor. Although the mandatory requirement for EIA makes it the essential path for approval of the project, the linkage between EIA and project implementation is still weak in many jurisdictions, which hinders the proper function of the EIA (Baker and McLelland, 2003; Cherp, 2001; Glasson and Salvador, 2000; Van Loon et al., 2010). The challenge is to strengthen this linkage and make EIA procedure

aligned to decision making as early as possible, thus increasing the potential for EIA to make a difference (Ahammed and Harvey, 2004; Ali, 2007; Cherp, 2001; Mao and Hills, 2002).

It is common for different ministries or institutions to have different or even conflicting interests regarding EIA, which means networking and collaboration is necessary and crucial to the effectiveness of an EIA (Ahmad and Wood, 2002; Van Loon et al., 2010). Not only inter-agency coordination but also locally based support are important, especially for local communities and municipalities (Ali, 2007; Cashmore et al., 2007; Glasson and Salvador, 2000; Kruopiene et al., 2009). It is also emphasized that both the horizontal collaboration between different regions and vertical dialogue between different levels of government could tremendously harmonize the EIA process and curtail bureaucratic intervention, which could also ensure efficiency and avoid duplication of work (Ahammed and Harvey, 2004; Cherp and Golubeva, 2004; Fitzpatrick and Sinclair, 2009; Mao and Hills, 2002).

Institutional framework is also emphasized as critical to improve EIA performance: adequate administrative support and a viable private consulting sector, the involvement of a regulatory agency in the establishment of “scoping” guidelines, formally defined rights and responsibilities of developers, clear provisions, reduction of administrative fees for EIAs, and an appeal procedure in the EIA process are all mentioned generally as fundamental for the function of EIA (Alemagi et al., 2007; Annandale, 2001; Cherp, 2001). Closely related to this, a great deal of emphasis is also placed on the legal regulation and guidelines of EIA: procedure manuals, methodological guidelines, and refined and precise wording of the relevant legislation are especially essential for good practice in EIA. An adaptive and participatory EIA system gives the space for EIA to be flexible, to be open to diverse forms of knowledge, and to experiment with various approaches (Cashmore et al., 2004; Cherp and Golubeva, 2004).

#### ***4.4 Will and attitude***

Political will plays a different role in different contexts. Seven articles have discussed this factor. As Kolhoff et al. explained, from the context of developing countries, the more they are dependent on agencies which are politically appointed to be responsible for EIA, the greater the risk of political influence on the assessment results (Kolhoff et al., 2008). Jay et al. also address

the strong influence of political results on the EIA and argue: “It is particularly in the later stages of decision making that the findings of EIA are likely to give way to political considerations” (Jay et al., 2007, p. 293). The implementation of EIA is highly constrained by extensive politicization and bureaucratic intervention (Cashmore et al., 2007; Kahangirwe, 2011; Kruopiene et al., 2009; Mao and Hills, 2002). Some articles also mentioned that value neutrality, bias, trust and respect in the opinions of consultants could be a factor to influence the outcome of EIAs (Cashmore et al., 2004; Cashmore et al., 2008; Mao and Hills, 2002).

#### 4.5 Summing up

To give an overview of the articles related to the discussion of general factors, the table below lists the number of articles for each category of general factors based on the primary or secondary sources of the articles (Table 5). We found 101 notions in 24 out of 33 articles relating to general factors which have an effect on EIA more broadly.

	Communication and understanding	Resources and capacities	Timing and organization	Will and attitude
No. of notions	14	38	37	12
No. of articles	13	14	20	8
Single case	0	0	0	0
Double case	0	0	0	0
Multiple case	2	3	2	1
General	8	8	14	4
knowledge				
Theoretical	3	3	4	3
research				

**Table 5** Number of articles, notions of general factors and sources of knowledge

The top eight most frequently mentioned general factors are: resources (10 notions), networking and collaboration (10 notions), professional EIA practitioners (9 notions), legal regulation of EIA (8 notions), integration of EIA into decision making process (7 notions), political will and power (7 notions), communication and interaction (7 notions), and stakeholder empowerment (7 notions). Of course this does not mean that the bigger the number of notions the critical factor has, the more critical or important this factor is. It only gives us a snapshot of the factors that are being discussed more often, which at least implies that these factors have attracted more attention and thus are critical and

more interesting to study than the others. Again it is found that the knowledge of general factors is based overwhelmingly on general knowledge with a minority based on multiple case study and theoretical research.

## **5. Discussion**

The most frequently mentioned critical factors, be it stage or general factors, are visualized in Figure 1. It can be seen that some factors are shown in both the boxes of stage factors and general factors, or covered in boxes of different stages at the same time. Some overlapping factors, such as dialogue between different stakeholders, tailored methods, capacities and competence of practitioners, are found referring both to screening/prediction and to the whole EIA process generally. The reason could be that some factors influence a wide range of human activities, i.e., they could have omnipotent explanatory power. In other cases it could be methodological flaws that lead the researcher not to address all the potential parts but to phrase the question very generally, being satisfied with asking general questions, as if the EIA was a unity and not consisting of stages that could be addressed individually. In practical research we must assume that the original interviews have not been so systematic that they could unveil such differences. There is apparently no clear boundary between stage factors and general factors, as these are also a product of the way interviews have been carried out. They function in such complex and intertwined modes that it seems we have a long way to go to trace the contingencies and causations between them.

Concerning the function of a single factor, it is still too absolute to say whether it contributes to or impedes the effectiveness of an EIA, as it depends very much on the context of the study and the interpretations of different scholars. Political will is recognized as unavoidable and as seriously affecting the impact of EIA (Cashmore et al., 2008; Jay et al., 2007; Kolhoff et al., 2009). Does this mean that EIA implementation is impeded if political will is present? It is argued that EIA will always be “political” by nature, so we must be rational, accept and embrace this fact, and thus to reflect on how to build upon it (Beattie, 1995). Political will cannot always be an impeding critical factor. It should be embodied into the dynamic process of EIA so that practitioners’ consciousness of how to cope with it is developed, and political will can thus evolve into a positive critical factor. The same goes for subjectivity as part of professional judgment. In most of the literature reviewed here, subjectivity is envisaged as an



impeding factor that hinders the unbiased prediction and documentation of assessment results due to the fact that EIA practitioners are dependent on the agents that support them financially (Kruopiene et al., 2009; Snell and Cowell, 2006). On the other hand it could be underlined that the values connected to the issue will probably lead to public deliberation and social learning, moving the EIA towards a successful outcome (Susskind and Dunlap, 1981; Wilkins, 2003).

The number of notions of stage and general factors we found in this review of literature on EIA implementation is almost equal. This half-half division between stage and general factors shapes a contrast compared with the proportion of the two in our previous article on SEA (Zhang et al., 2013), where only 24% of critical factors are stage factors and 76% are of a more general nature.

SEA being strategic in nature deals with broad elements rather than limited details or specific stages. This shift of focus stresses some general characteristics while at the same time keeping its distance from project EIA. Since the scope is broader in SEA than in EIA, the coverage of critical factors could also be stretched and extended to support SEA's function at a strategic level.

The literature reviewed for both EIA and SEA was published in the first decade of the twentieth century, when SEA and EIA were probably at their different stages of self-evolution. It is difficult to say whether EIA has reached a more developed level after more than forty years, where for EIA more factors are found in and related to the specific stages, while SEA research is still addressing SEA as a comprehensive instrument that takes "pars pro toto" when investigating its dynamics. At least it can be hypothesized that the stage of development of EIA and SEA has an influence on the focus and emphasis of our research. EIA research, due to the age of EIA, favors more specific questioning, looking in more detail into parts of the instrument. Likewise it could be expected that SEA would generate more critical factors of a general nature due to its more strategic nature.

## **6. Conclusion and research implications**

In the recent past, a plethora of contributions on EIA effectiveness has been engendered. In this paper we have reviewed 33 articles ranging from 1999 to

2011 to see how EIA effectiveness has been researched and what the critical factors identified are that influence the implementation of EIA. The study is not without limitations. First, only academic journal articles were included in the review. Other relevant knowledge on the topic is likely also to be found in conference proceedings, textbooks and doctoral theses, and inclusion of these sources could have altered or validated the conclusions. Second, only 33 articles ranging from 1999 to 2011 have been reviewed, and in this case, it is unavoidable to ask if a sample of 33 articles is enough to draw any conclusions. Third, we might have missed relevant articles published within the time frame during the literature search. Notwithstanding these limitations, we believe that this review provides relevant and reasonable insights into the links between critical factors and the EIA implementation process.

It is far from sufficient to look only at the notions identified in the literature, which depend very much not only on the context in which they work, but also on how these meanings have been interpreted and transmitted into the framework of this article. The weight of how critical each factor is depends on how the interpretation and grouping of the literature takes place. Among the 33 articles, 21 articles are based on general knowledge drawn from questionnaires, interviews or experts' experience of their past work. Just five articles are based on in-depth multiple case study, one article on a single case study, and six articles on theoretical research. Out of 33 articles, 9 only refer to stage factors, while 8 only refer to general factors, and 16 have talked about both stage and general factors. It is difficult to draw a clear line between the different validity of these research sources. Our impression is that there is an evident imbalance between in-depth empirical or theoretical material and general knowledge-based research, which still leaves some potential space to move forward in this research area.

One additional point that should be mentioned here is that even if all of these stage factors function well, it does not mean that the EIA is effective. Effectiveness as defined here is EIA's influence on decision-making, which is called direct environmental effectiveness (Stoegheler et al., 2009). It is indeed reasonable to say that the function of all the stage factors contributes to an effective output or outcome of EIA. However the function of stage factors can influence beyond the specific stage to which each is related. The argument here is that stage factors have strong links to and affect a specific EIA

implementation stage, while at the same time they play a direct or indirect role in the EIA system both individually and cumulatively.

Our intention has been to sketch an overview picture of critical factors for EIA and their different role in the EIA implementation process, be it stage related or general in nature. Despite the valuable development achieved within the field of research over the last decade, this review and analysis of articles points to some themes for future research and understanding. The first concerns the pre-EIA stage, involving agenda setting, initiation/deciding to decide and project formulation. Its influence as a factor for how the project EIA comes into being is undeniable. It is therefore surprising that the analysis revealed no critical factors in this area mentioned in the literature. This stage must be seen as an under-researched arena in the implementation process. Another area for potential research is the influence related to the specific stages of “identification of alternatives” and “mitigation”. Besides additional research within these areas, an overall suggestion from this study is that future research in EIA effectiveness can be advanced through the use of more in-depth case studies and a stronger conceptual basis. The review showed a relative lack of theoretical work, and future work can build a greater theoretical and conceptual foundation for subsequent empirical studies.

The review has shown that research within the field generally pays little attention to the causation between critical factors and the specific stages in the process involved in EIA implementation. Therefore it is argued that advancement in the field will benefit from an explicit consciousness around the whole process and the causation involved, and that this will enable a greater possibility to compare research results and expand the shared knowledge further.

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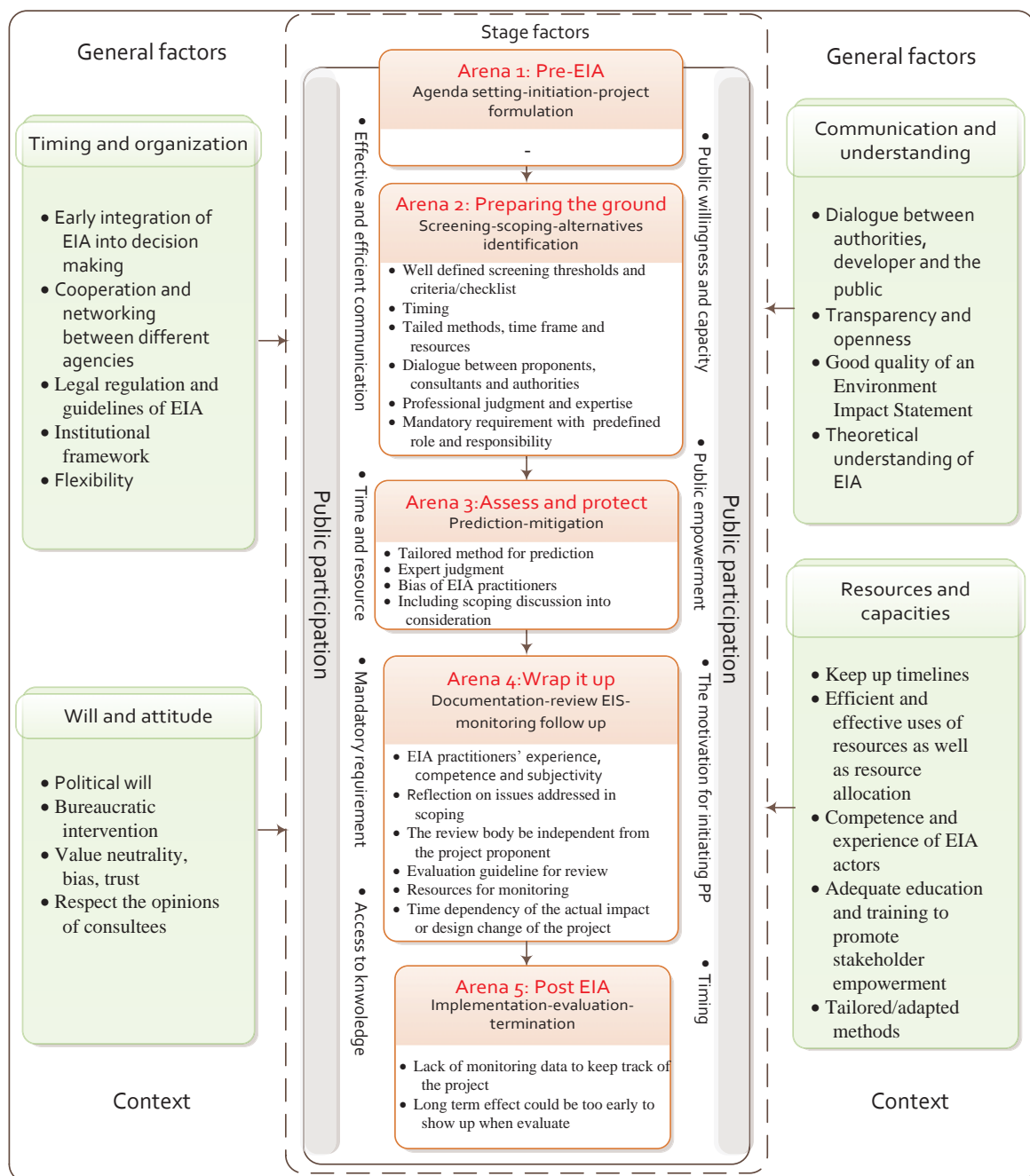
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**Fig.1.** Visualizing stage factors and general factors for direct environmental effectiveness of an EIA

## Searching for common denominators for SEA effectiveness

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**Abstract:** Based on research on the effectiveness of SEA and the critical factors determining it, numerous questions regarding SEA and its effectiveness have come to light. In this paper we address a range of these questions based on a review of 30 peer-reviewed scientific articles. Questions are examined such as how effectiveness is defined and how the critical factors affecting it are determined.

Today the concept of effectiveness is broadly accepted, but its meaning differs between different schools of thought. Effectiveness is clearly kept apart from the old-fashioned concept of quality, but in many definitions of SEA-effectiveness we have seen the concepts presented as overlapping and developing through time. At any point in time a multitude of meanings of effectiveness thus exist; sustaining the idea of Thomas Kuhn that this kind of social science is not really cumulative. To overcome these delimitations we present a more comprehensive view of how these different concepts can be presented in a number of logical and historical steps.

The concept of critical factors is not upheld to the same degree as effectiveness. In order to clarify the role of critical factors we identified a number of these in 30 reviewed articles. These critical factors are either of a general nature pertaining to the fact that they can influence the whole of the SEA, or of a more focused nature influencing specific stages of the process taking place within the SEA.

Based on the critical factors and their concentration into broader concepts, it leads us to the formulation of a general, more comprehensive model that can describe the interrelationship between general- and stage-specific critical factors. This model is then compared to other similar models described in the literature, and we conclude that “comprehensive models of causation” exist which condense a broader range of critical factors to embrace only 4–10 main topics that describes the most pivotal forces at play. A few of these models are identified from the literature, and after describing and comparing these we conclude that this kind of model could be able to facilitate a common understanding of the nature of SEA, and thus form a basis for future research.

**Keywords:** Review, SEA, effectiveness, critical factors, contextual, contingency

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## 1. Introduction

Fundamentally we will in this article address how to handle the **results** of a SEA. The results can cover the direct and indirect results of the SEA and they can have their origin in different aspects of the SEA process. Looking at the **results** in general there are several words that partly or fully cover the meaning of that word. It is important to clarify exactly which words best express these differences. We start out by listing a range of one-word definitions on the results as well as one-word definitions on the activities leading up to results being used to describe the forces producing these results. The words we are looking for could be **performance**, **output**, or **outcome**, but semantically there is a long list of words that designate how “**doing something**” causes “**something coming out of doing something**”. Table 1 list some of these synonymous words – just for inspiration! Many of these words are so closely connected, overlapping and sometimes old fashioned that you really cannot argue that they all have a role to play. Only a few will be used in science, but once in a while new words will be presented to cover new meanings that have arisen. Furthermore it is also often found that new words are introduced, not explicitly with a reference to new meanings but often to create novel schools of thought just to be different, i.e. following a fad. Maybe this is the reason between the proliferation of new schools of thought, and thus also the reason behind the non-cumulative nature of much of social science (Kuhn, 1962).

<b>Doing something</b>	<b>Something coming out of</b>
Make	Product
Mission	Accomplish
Endeavour	Output
Deliver	Outcome
Emanate	Result
Initiate	Performance
Finalise	Impact
	Effect

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Table 1. Synonymous for “doing something” and “something coming out of doing something”.

However there is a further differentiation here that is worth mentioning, as the “doing something” can not only refer to “the whole phase” but also segments of

it, using specific words for e.g. the preliminary phases (like initiating) or the final phases (like accomplishing and finalising)

Many of these words have their origin in daily life situations, while some are more strictly defined in a scientific manner. In any case, they designate slightly different meanings and can thus be used for quite different purposes, but in daily language we have a tendency to let them become more amorphic and amoebic than intended (Baier et al., 1986).

Using these words for professional or research purposes often creates frustration as they have slightly different meanings that may or may not cover different parts of reality, and it seems like different content can be placed in the same wording as well as the other way around – these different words can be used as synonyms.

As can be seen, only a few of the words in Table 1 are normally found in scientific literature to designate the SEA process and what comes out of it. It could be assumed that the words we find used in the SEA/EIA scientific community are among the more stringent and clear-cut. Looking into the research we find that they do not convey such a clear picture – the choice of a proper vocabulary obviously owes its existence to other driving forces than mere reason. Explanations for this could be the fashionable trends found in the institutional field (Scott, 1995; Scott and Meyer, 1994), mimetic mechanisms constituting institutional isomorphism (DiMaggio and Powell, 1991) or other driving forces like the “distinction” (Bourdieu, 1984) and the fluffiness of words (Baier et al., 1986) or the need for “making sense” (Weick, 1995) of these words and their content. Anyway, there seems to be a certain import business in effect, where different SEA/EIA subgroups import concepts from other communities, hoping to find words (concepts) that touch a string in the audience and then form the basis for a new school of thought. This is true for SEA-practitioners and researchers condensing their experiences into new concepts, but also for importing them from other researchers. This process is characterised by a growing number of competing concepts being introduced rather than a few establishing a consensus (Kuhn, 1962). This import of concepts not only occurs in relation to the explanation of the empirical aspects of the SEA-process but is also found in relation to more broader views of the SEA/EIA process, relating it for example to its connection to planning theories of different kinds such as synoptic planning (Faludi, 1973), bounded

rationalities (March and Olson, 1989; Kingsdon, 1984) and muddling through (Lindblom, 1959), as well as communicative planning (Forester, 1999; Healy, 1997). Generally speaking this unveils a picture where several competing paradigms exist and where cumulative knowledge is not established by working within one, more stable paradigm – a situation very close to Kuhn's definition of non-cumulative social sciences (Kuhn, 1962).

If SEA research wants to be cumulative a basis need to be formed of the concepts that researchers agree on. This not only goes for the definition of effectiveness and its relation to the critical factors affecting it, as seen above, but also to the different contexts that effectiveness is seen in relation to. Effectiveness is certainly a concept on which there is growing consensus (Zhang et al. 2013), but we already see a lot of discord as different kinds of effectiveness (procedural-, process- and transformative but also direct and indirect) are being introduced. We try to establish some common denominators for this effectiveness so they can be grouped into fewer schools of thought, and thus hopefully make the life of SEA-practitioners simpler.

But also from the theoretical side it is worth looking more closely at the concept of effectiveness and see how it relates to the aim of the SEA, which is to influence decision making so that plans and programs are deliver better outcomes. For some of the articles investigated we found that researchers questioned whether SEA produced any benefits. Some said that the impacts were not easy to identify, others believed that more than one third had no impact at all (Runhaar and Driessen, 2007). Looking closer at the way researchers describe the SEA it is often found that an over-simplified usage of these concepts are given, meaning that the understanding of the relationship between SEA, decision making, and the impacts on nature and society are being blurred (Sheate and Partidário, 2010).

This review is based on the analysis of 30 articles mentioned in the reference list, and also used for the article by Zhang et al. (2013), where it is used to describe a model for critical factors with an impact on the effectiveness of SEA. They were selected through a process where 13 articles using words in their title such as "Strategic Environmental Assessment/SEA" and one or more of the keywords "effectiveness", "success of SEA", "quality of SEA", "factors", "criteria" and "evaluation" were chosen. These 13 references then provided a basis for using a snowballing technique to identify other relevant references,

based on geographic coverage, and different contexts and jurisdictions to make the sources of data as diverse as possible (Zhang et al., 2013).

Section 2 and 3 of the article will be devoted to describing some different comprehensive models and definitions of SEA effectiveness that has been used within this community over the last 20 years. In section 4 we return to the description of critical factors affecting SEA effectiveness, giving a broad overview of how it is seen in these 30 studied articles. In section 5 we make some reflections on the concepts of contextuality and contingency, and finally in section 6 we propose a more comprehensive model of causation based on the amalgamation of our model with 5 others identified among the 30 articles reviewed.

## 2. Effectiveness and quality of SEA

As SEA grew out of EIA it was quite natural that the first generations of SEA theory subscribed to more rational views of the SEA process and its results. In the 1990s, when the debate on SEA was starting, there was an emphasis on the logic of the process and the procedures and guidelines to follow. The notion was at this time that as long as procedures were followed the promised results of the SEA would be delivered. With an emphasis on procedures and results stipulated from them being followed it was quite obvious that following good procedures leads to quality, which signifies that the expected effectiveness would result (cf. Figure 1). Quality thus became the question of interest. The concept of quality was the optimal yardstick to measure how good procedures were followed. This perspective is still relevant when the focus is on how well the procedures are followed, for example when discussing the content of the environmental impact statement (EIS) a checklist is produced that assures that procedures were followed in accordance with the rules or guidelines. Today SEA research does not use quality alone but wraps it up together with effectiveness or – more often – focuses only on effectiveness in its own right.



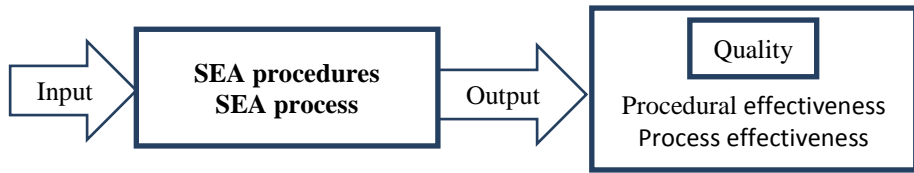
**Figure 1.** Following procedures to create quality.

This distinction between procedure and process is underlined by many authors, and it is highlighted that procedure is related to the question of quality.

Soon it became obvious that the following of procedures was not mechanistic, delivering repetitive uniform results, but was a process involving organisations and the people therein, with different capacities and interests and different degrees of discretionary powers and coping strategies as professionals, stakeholders or as street-level bureaucrats (Kørnøv and Thissen, 2000). The emphasis from the mid- to late 1990s then moved towards an understanding of the process of the SEA as a process dependent on a variety of external factors. It was now obvious that procedures plus the process taking place was the unit of analysis. If procedures are followed quality is accomplished, the SEA will by definition also be effective, but the process also influences the effectiveness for better or worse depending on how a range of critical factors affects or contributes to it (Hildén et al., 2004).

In other words SEA was beginning to be seen like an implementation process, although this word was only seldom used to describe it (Zhang et al., 2013).

In the 30 articles we examined, some like Hilden et al., (2004) and Stoeglehner et al. (2009) as well as a few others also distinguish between procedures and processes. Normally it is argued that it is hard to distinguish between the two concepts, but they find quality “a narrower approach to effectiveness” (Stoeghleher et al., 2009, p. 112), which also leads to the argument that more formalised SEA procedures “may enhance quality and effectiveness by making the process more systematic” (Hilden et al., 2004, p. 533). So following that we could conclude that two pairs of concepts describe the dynamics where (following) procedures and (making) the processes lead to an output with a distinct quality discernible from the two indissoluble aspects of effectiveness; named procedural and process effectiveness. By indissoluble we mean that the two aspects of input (the “machinery”) as well as the two aspects of output (“results”) are discernible (can be seen to be different), but on the other hand are fused together, so they can be identified when talking about them (or analysing, theorising) but cannot be dichotomised or in other senses of the word be “tomised” (“cut out”) as separate entities (cf. Figure 2). The concept “indissoluble” is found, although not defined, in van Buuren and Nooteboom (2009).



**Figure 2.** Procedures leading to quality together with the process, which is largely unintended, they work together to create effectiveness.

Fischer (2010) is one of the few in our reviewed 30 articles who systematically looked at the quality of EA reports. He uses some of the traditional checklists but he is also quite precise in stating that quality goes together with procedures, but he does not relate quality to process instead he uses the word “insufficient” which clearly indicates a relationship with procedures that should be in place (Fischer, 2010, pp. 68–69). Therivel and Walsh (2006) also look into the experiences of the UK after one year of SEA practice. Their article is very much focused on the level of procedures (quality), looking into what has or has not been implemented – so although the concept of effectiveness is briefly mentioned the article mainly addresses how practice relates to the procedures and guidelines.

Hilden et al. (2004) also argue that we should not look for procedural requirements but focus more on the “problems of effectiveness” (p. 532). It is important to “recognize the difference between procedure and process” (p. 533).

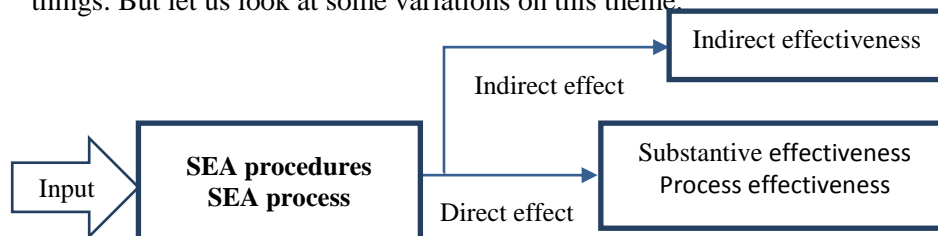
The rather simple tabula of causations we have presented here, encompassing procedure, process and quality, as well as effectiveness, cannot stand alone (cf. Figure2). Other researchers may have found other kinds of classification more promising and presented alternative or maybe enlarged versions of the model. These models also deserve mentioning, and an attempt to classify them is presented in the following section.

### 3. Procedures and process – direct and indirect

In around 2000, the way was paved for the double-perspective focusing on both the SEA-procedures and the SEA-process. One of the often-cited definitions was the division of the overall process that was now formulated as “substantive effectiveness” and “process related effectiveness” where substantive relates to the explicitly formulated goals (environmental or sustainable) and process-related goals to the more tacit goals (creating consensus, organisational survival,



etc.). In both cases (cf. Figure 3) we also find indirect effects beside the direct effects, which relate more to learning and empowerment (Stoeglehner et al., 2009). The direct effects come from the substantive process where the procedures of the SEA are followed, and process-related effectiveness owes its existence to the organisational life unfolding while being busy doing other things. But let us look at some variations on this theme.



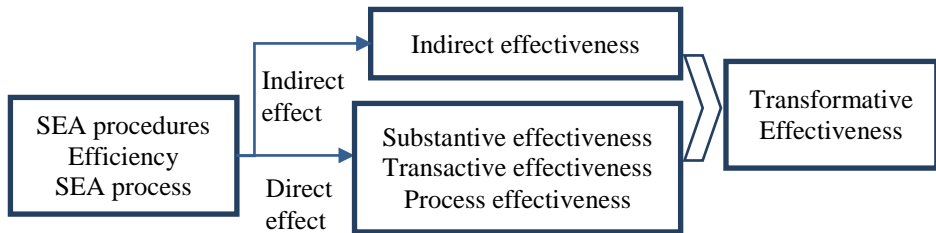
**Figure 3.** Substantive and process-related effectiveness both co-producing indirect effects.

In their important article from 2009, van Buuren and Nooteboom defined an effective SEA as “used in decision-making, and ultimately leads to the selection of the most environmentally friendly option and/or the adoption of necessary mitigation measures” (p. 146). They add that effectiveness also depends “on its contribution to a collaborative dialogue” (van Buuren and Nooteboom, 2009, p. 146), thus introducing both direct and indirect impacts. These ideas are also touched upon by Runhaar and Driessen (2007).

Normally outcomes (and outputs) are seen to be encompassed in the direct results of the SEA and thus emanating from the substantive process. Indirectly it is assumed that the substantive process also generates some indirect effects like learning about the substantives, i.e. on the environment and sustainability and changing attitudes for example (Stoeglehner et al., 2009, p.113; see also Therivel and Minas, 2002).

Theophilou et al. (2010) further develop these ideas and take as a starting point that there are 3 types of “effectiveness”: procedural, substantive and transactive (p. 138). This idea has its origin in Sadler (1996). The transactive part of the definition is understood as the efficiency (or better transaction costs) of the process and thus relates to the internal economising of the SEA process, and thus falls outside the scope of this investigation.

In Bina (2008) effectiveness can be seen as substantive as well as procedural and transformative, where the latter relates to the changing of the world around us, or as she calls it, an “incremental type effectiveness”. Quoting Wallington et al. (2007) the transformative strategies “depict SEA as an intentionally ‘political process’ intended to change the way decisions are made and to induce learning about environmental values in institutions, organizations and civil society” (Wallington et al., 2007, p. 573). The effectiveness of SEA can thus also be seen as having a transformative potential, i.e. contributing to the development of the country or society in which it is carried out (cf. Figure 4).



**Figure 4.** A more complete model including transactive effectiveness (efficiency) as well as the broad definition of transformative effectiveness compiling effects on the wider society that are generated as co-products of other types of effectiveness.

As we have already seen, there is a more or less clear indication that taking part in a SEA process will also ameliorate the ground for change through experimentation and learning, be they intentional or not. Some authors clearly underline that in their national cases there is no sufficient capacity to get this process going, as e.g. in Italy where its prospects looks dire (Fischer and Gazzola, 2006) or in Turkey (Unalan and Cowell, 2009) where there are more reason to be optimistic, but also in other countries we find such more or less subtle effects. But as they are not the results of explicit formulated goals, they should in any case be grouped as indirect effects, which are of course real but not intended although easily anticipated. On these grounds it could be questioned whether some of the present definition of effectiveness are too narrow and should always also include indirect effectiveness. Indirect is both the indirect effectiveness emanating from the process as well as the transformative effects, see Figure 4. The first relates to the indirect effects from the SEA process, while the latter has to do with wider societal changes manifesting themselves in the wider society, distant from the SEA process in

space and time, and covering four effectiveness criteria. These “transformative potentialities of environmental assessment” as expressed by Cashmore et al. (2008, p. 146), cover learning outcomes, governance outcomes, development outcomes and attitudinal and value changes.

As mentioned, Stoeglehner et al. (2009) discriminate between direct and indirect or incremental effectiveness as well as substantive and process effectiveness. This led Stoeglehner et al. (2009) to propose a model combining these 4 aspects but renaming substantive as environmental effectiveness and process-related as democratic effectiveness. Being more true to the original wording of the two types of direct effectiveness, we will propose yet another version of the model, cf. Table 2.

	Substantive effectiveness	Process effectiveness
Direct effectiveness	Environmental or sustainable output/outcome according to goals set	Political agenda and bargaining Democratic virtues
Indirect effectiveness	Learning about the environment and sustainability Changing attitudes to environment and sustainability	Learning and experimentation Deliberation

Table 2. Connection between the two dichotomies direct/indirect and substantive/process effectiveness (Inspired by Stoeglehner et al., 2009).

The organisational efforts being unfolded in the process produce direct effects. The politicians and the involvement of participating SEA professionals in their political work with stakeholders sets the framework for the process and procedures, not only direct effects like legitimacy and trust and other democratic virtues as a result, but also indirect process-related effects like learning about democracy and getting involved in the process (deliberation).

#### 4. Critical factors affecting SEA effectiveness

Recently a lot of interest in understanding the determinants for effectiveness has manifested itself in quite a few investigations on this topic. In an article written by us (Zhang et al., 2013), we end up concluding that SEA researchers should be more precise when dealing not only with concepts like effectiveness but also when determining what causation lies behind the factors that can critically affect effectiveness. In the first article on SEA, where another on EIA is to follow, we

decided to address how “*effectiveness*” is seen to be affected by “*critical factors*”.

In the literature there are many different definitions and words proposed that reflect different “results”, as well as how to describe how effectiveness is produced. A number are already listed in Table 1. According to Fischer and Gazzola (2006) the following words describing what the results are and how they are produced could be mentioned. Sadler and Verheem (1996), in one of the first definitions around, mention “basic elements for effective SEA”, while Partidario (1997) talks about “SEA good practice elements”. DETR (1998) returns to the notion of “basic principles of SEA”. Nooteboom (1999) twists this and underlines the “conditions of effectiveness for SEA”, but CSIR (2000) sticks with the older versions and return to “principles for SEA guidelines”. But from the turn of the century it is noticeable that again factors become pivotal companions in the quest for effectiveness, as in the Finnish definition of “factors for SEA effectiveness in decision making” (Finnish Ministry of the Environment, 2001) or likewise from the IAIA definition of “SEA performance criteria” (IAIA, 2002). Looking at the 30 articles we have tried to identify how each of them describes the results of the SEA and what it is affected by. This is presented in Table 3 together with an example of the wording of the relationship between results and what affects them.

From these well-known definitions certain aspects of the discussion on effectiveness should be highlighted. First of all it seems as if the older version has a tendency to underline that following the guidelines and steps creates results as it guarantees a good quality of SEA. Later this will be supplemented with notions that quality and effectiveness are the same. Following procedures in other words ensures quality. But these only focus on internal aspects of the SEA, as procedures are laid down in guidelines, and if they are followed we end up with better quality. But early on it was realised that a lot of hindrances, obstacles and impediments caused delays, and goals were not met and consequently an SEA with low quality was the result. But it was often also realised that the stumbling of projects were caused by circumstances that had nothing to do with how procedures were followed. Years back, guidelines for the SEA procedures or for the content of the EIS was often used as recipes for how to proceed as well as yardsticks for how to evaluate a SEA. But today the focus has definitely shifted to also include the process and the effectiveness it brings in focus. But what is it then that constitutes the stumbling blocks of the

SEA process? What kind of factors facilitate or impede so that you have positive or negative outcomes?

Effectiveness is at the core of much of SEA research, and recent years have seen a shift in the focus from effectiveness per se to supplement it with the causes that affects it. Many such critical factors have been proposed in recent literature, encompassing concepts like “barriers”, “constraints”, “factors”, “contextual influences” and other criteria. As part of the research we have conducted, the fundamental definitions given in the 30 SEA research articles is scrutinised in order to see how these critical factors (Zhang et al., 2013) can be grouped and defined. Here we found that the things that can affect the process where effectiveness is produced can be grouped into definitions of the “results” of the SEA, like “effectiveness”, “performance” etc., as well as the naming of what it is “affected by”, as for example “factors”, “constraints”, etc.

Looking at the “results” we find that “effectiveness” is by far the most used denominator of results – representing 15 articles – while closely connected concepts like “performance” (7), “implementation” (2) and “impacts” (1) (covering 10 articles) together establish effectiveness as the best denominator, where this grouping represents 83% of all articles. Quality is only mentioned in 2 articles, while articles with a broader scope, like “transformation in modes of governance” as well as “collaborative policy process” and “improving SEA system” point to the fact that the effect on society at large is also often on the agenda.

If the same experiment is carried out in order to see how “being affected by” can be grouped, it clearly shows that these words relate very much to the notion of “facilitation” and “implementation barriers and constraints”. In total we found that 18 of the 30 articles were related to setting criteria (10), being influenced by the context (2) and key performance indicators (5). With this background it seems logical to relate this to the idea of contingency, i.e. stating that factors that influence the process leading to effectiveness are members of the family of contingent relationships between cause and effect. The remaining 10 articles are also closely connected to this idea of contingency, but are orchestrating somewhat different aspects of it. We find that they can accordingly be grouped as related to factors and facilitating factors (3) while concepts related to implementation problems referring to “stumbling”, “constraints”, and “barriers” are more common (7). Facilitation and constraints

are in many regards two sides of the same coin and point to the more active side of “nurturing” or “overcoming”, i.e. pointing to specific aspects of the capacity of the involved parties to “nurture” and “overcome” problems related to the causation between contextual pressures and the SEA process, and in the end as increased SEA effectiveness. In 28 out of the 30 articles there are strong indications that “contingency” must clearly play a role in determining some of the characteristics of such “affects”, i.e. “under this or that circumstance the following could be the case”. While effectiveness seems to be agreed upon today as the common denominator of how to see the results of SEA, the causative forces – how SEA is being affected by critical factors – is, to some surprise, also agreed upon, at least in the sense that contingency is a common denominator and furthermore the description of these as problems very often relates to the way problems are dealt with in implementation research and in theories of “capacity building”. From this starting point some basic ideas of how this kind of causation takes place should and could be further elaborated.

## 5. Contextuality and contingency

Reviewing the SEA literature points to two basic concepts that are important when discussing causation. The concept of context is referred to – directly or indirectly – in many of the articles (see e.g. Runhaar and Driessen, 2007). Bina (2008) also talks about effectiveness in contrast with procedures and quality, but instead of factors or others she works with context – it is the context that influences how the SEA becomes effective. Retief (2007) also looks at SEA effectiveness and mentions how it depends on the context. Hilding-Rydevik and Bjarnadottir (2007) conduct the most elaborated discussion as they want to give “substance to the concept of context” (p. 666). They state that “context is the set of facts and circumstances that have an impact on the chosen approaches to SEA” (p. 668). They also talk explicitly about context and relate it to implementation. They underline that it is important to have context consciousness and sensitivity in order to integrate environmental perspectives in the planning process.

The SEA with its normative and procedural assumptions, and ambitions on best practice, is based on the fact that most of the critical factors per definition are then inside the SEA process we are studying, and it is in that sense context-free (Hilding-Rydevik and Bjarnadottir, 2007, p. 666). It is even seen as a way forward that “a number of procedural steps and context free assumptions on

“best practice” and effectiveness criteria are now included in the EIA and SEA” (p. 679) in order to remedy its deficiencies. Actually it brings us back to a time before effectiveness, as it goes back to the time of procedures and quality. But of course all organisational and societal processes of this kind must have from a few to many contextual factors impacting on the SEA process, as it per definition functions within an open system (Scott, 1981).

The impact from contextual factors will always be there. Referring back to our work on SEA (Zhang et al, 2013) it is obvious that what has been called “general factors” should mostly be counted as contextual, and among those we find some that are closer and some factors that are more distant in nature. The contextual factors are of very different natures, ranging from institutional settings that work on larger timespans such as hundreds of years, to more close general factors representing some new fads or interests, or institutional settings, all representing shared meaning and practices. No organisational process can be said to be context free. Even if procedural processes are established there will always be something outside the organisational process that must be counted as contextual, and which has an impact however remote it may be. Personally we are in favour of the “new institutional theory” of Scott, March and Meyer, so it does not feel awkward to claim that the environment of organisations makes a mighty imprint on the organisation, even to such a degree as to claim that organisations consists of bits and pieces that predominantly are of societal origin.

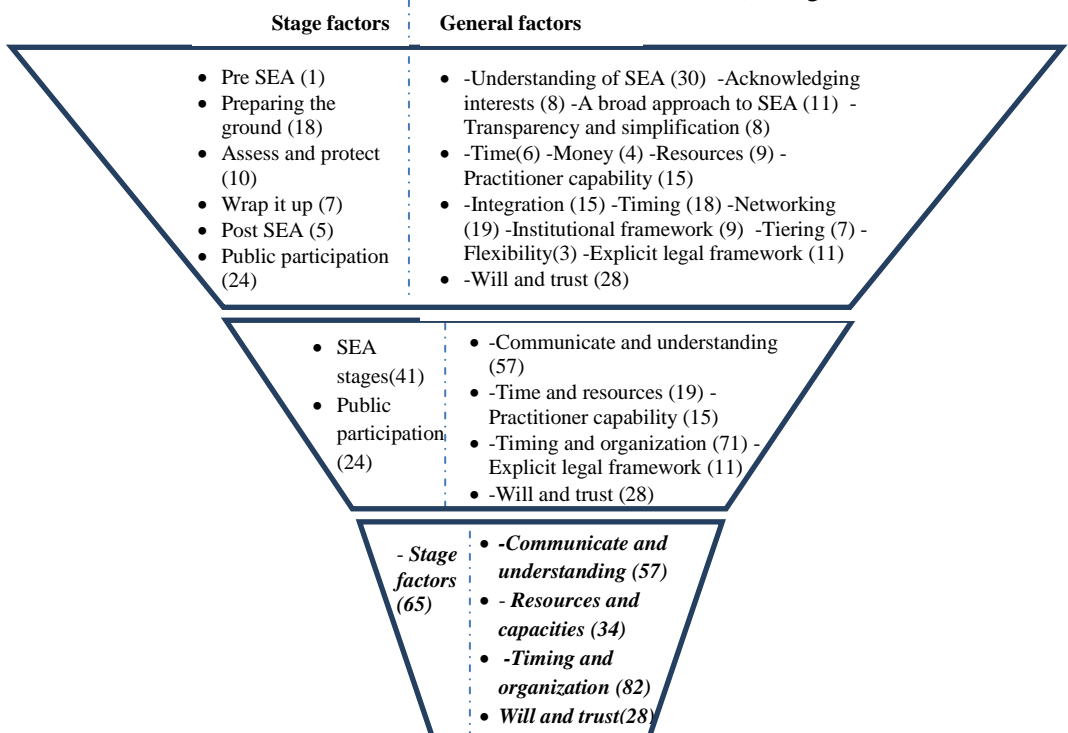
Wang et al. (2009) also indicate the importance of context: “The inevitabilities of context driven differences makes it all the more important to review and refine the SEA system based on case studies of SEAs and the context-specific characteristics in each case” (Wang et al, 2009, p. 408). These formulations highlight the point that most contextual factors have different impacts on the process depending on the peculiarities of the contextual factors in question. Contextuality is thus always by nature contingent: “The inevitabilities of context driven differences” as defined by Wang et al. (2009), makes contingency and contextuality almost synonymous.

“Research in the application of the criteria suggested that it is not equally valid for all contexts and/or all types of assessments” states Retief (2007, p. 85), in a conclusion also reached by Fischer (2002), Noble (2004) and Fischer and Gazzola (2006) that also touches on contingency as the proper way of defining

how this causation is best understood. But contingency, just as any other definition of relationship, requires that the concepts are clearly defined, and that leaves us with the task of establishing clarity so that different schools of thought become comparable and so that the causation can be described as logically as possible.

## 6. From critical factors to comprehensive models of causation

In recent research we have highlighted the usefulness of the concept “critical factors” (Zhang et al., 2013), and tried to go beyond the many words that are presently generated within the SEA community, to reveal all notions of critical factors and then afterward make a compilation of similar meanings in order to group these factors in a more comprehensive manner. By a “comprehensive model of causation” is meant an overall model that describes the critical factors that are related to the SEA process, consisting of both factors that are general in nature (cf. Figure 5) but also stage-specific critical factors (Zhang et al., 2013).



**Figure 5** Comprehensive model of causation based on the 4 main groups of general critical factors: Communication and Understanding, Resources and Capacities, Timing and Organisation; Will and Trust, as well as the critical factors related to stage-specific procedures (Based on Zhang et al, 2013).



Some authors share our view of causation, although not necessarily using exactly the same words. Runhaar and Driessen (2007) for example propose that the concept “impact” should be the proper concept for the “results” and that there are “factors contributing to this impact” (p. 6). Summing up on their case study they conclude that their list of “factors” – or what we in the following will call a comprehensive models of causation – is as “heterogeneous as those found in the literature” (p. 11). The same is concluded in Noble’s article covering similar Canadian experiences (Noble, 2009).

The stage-specific factors are defined as related to the individual stages they impact on and are thus seen as internal factors. In the original study (Zhang et al., 2013) we found that 65 of 266 critical factors were stage related, while 201 were of a more general nature. Not only should the comprehensive model presented here be based on these 201 general critical factors but also embrace the 65 critical factors identified as being related to the specific stages and thus more specifically addressing the problems related to these.

The stage related factors are in Table 5 divided into the overall four steps that are found in the SEA procedure, where “preparing the ground” covers screening, scoping and alternatives (Zhang et al., 2013), “assess and protect” covers prediction and mitigation, while “wrap it up” is the documentation and review of the SEA process and “follow up” covers monitoring.

Searching the 30 analysed articles for models like the one we have tried to establish here reveals that only 6 articles have such a broad aim. This means that most articles are only analysing part of the problems related to what determines the effectiveness of the (whole) SEA. Linking critical factors to the generation of effectiveness means that a comprehensive model can be established that cover the whole range of factors that can impact on the final results of the SEA, as for example identifying critical factors that has an impact on how procedures are followed (stage-specific) or critical factors that are general in nature, as for example the existence of political will or the fact that money or other resources should be available.

The other comprehensive models we will present in the following are all based on the existence of both external (general) factors and internal (stage) factors. Out of the 6 comprehensive models reviewed in this article, a few present even

more elaborate models including more dimensions of the context (like e.g. Bina, 2008). We will not go deeper into these elaborations but instead look closer at the 6 models identified.

One of the most conspicuous attempts to define criteria for performance was the IAIA list of 17 criteria formulated in 1999 (Verheem, 1999) and adopted by IAIA in 2002 (Fischer, 2002). This milestone work put an end to the debate on procedures and quality as it started shifting the focus to SEA processes. These criteria were very broad, covering “good practice principles” as well as following procedures. This list from IAIA was later elaborated on by Fischer (2002, p. 87) who condensed it to the following 6 “themes”: SEA is integrated; sustainability led; focused; accountable; participative and iterative, see Table 5.

According to Fischer and Gazzola (2006, p. 401), effectiveness criteria can be characterised as objective led, efficient, relevant, accountable, transparent, iterative, adaptive, flexible, integrated and sustainable decision making. There are two main aspects, the decision making context and a specific SEA methodology. This model can be converted according to the local set-up into for example an Italian version if necessary (Fischer and Gazzola, 2006). Furthermore, they also clearly underline the importance of an effective EIA system that can be tiered with the SEA. All in all this seems to be a subdivision that could be close to ours (Zhang et al., 2013). But on the other hand it seems like the lists of criteria they make and the subdivision that they fit into is constantly shifting. Take a recital like the following: Objective led, efficient, relevant, accountable, transparent, iterative, adaptive, flexible, integrated and sustainable decision making (Fischer and Gazzola, 2006, p. 401). Here the words used are intimately overlapping and it is quite difficult to say when one word or concept stops and the other begin. This could lead to some reflections upon the meaning of the words and how they are invented or produced. First of all it seems as if the words are definitely on different levels of reality. The two words “objective led” and “relevant” – are they different, are they overlapping or are they on different levels? What about “iterative, adaptive, flexible”? We would not dare to say it, but our gut feeling is that it is a mess and that a stricter procedure of handling these words when popping up in interviews or in discussion among peers should be further developed. Another way of dealing with these words would be to look at them as basic notions of critical factors that should be compiled from the bottom up, where induction is used to condense and distil them into broader categories. In practical life the critical

factors identified are also influenced from the top down as existing categories often subsume new words and concepts under existing classifications.

Hilden et al. (2004) talk about necessary conditions for effectiveness and facilitating factors, a division that is close to the distinctions made by Zhang et al. (2013) as well as by Fischer and Gazzola (2006). They distinguish between “necessary conditions for effectiveness” consisting of “political will to use the information, integration, tiering and correct timing” (Hilden et al., 2004) and the general organisation of the assessment as preconditions for it, while facilitating factors would be legal provisions, tailoring, providing information and networking.

Noble (2009) works with three types of criteria relating to systems, processes and results. The system criteria cover provisions, integration, tiering and the role of sustainable development. The process criteria mainly deals with the stages defined in the SEA procedures but of a more general nature here we found concepts like responsibility, accountability, participation and transparency included. For result criteria the impacts on decision making, the influence on the project as well as wider learning process were included. These ideas have been developed by Noble and associates in several other articles (Noble, 2004, Gachechiladze et al., 2009) based on Canadian experiences.

Retief (2007) in his research identifies indicators that reflect principles and objectives (but not exactly the ones mentioned above) and he then assess their contribution to performance. The principles are boiled down to 5: Context specific, sustainability lead, participative, proactive and efficient. Are these 5 better than any of those mentioned previously? His general conclusion is that they “largely failed to facilitate a common understanding” (Retief, 2007, p. 98), which is close to the conclusion drawn by others who found that in order to align SEA with local conditions it became diversified and ended as “critically confusing” (Partidario, 2000, p. 647) – a “lost concept” (Fischer and Seaton, 2002, p. 31). Retief (2007) points to that there is a need to look more into real “decision making” but admits that many researchers within this field like a more structured method, and thus concludes that so far the process orientation has not delivered a viable alternative (Retief, 2007, p. 98). It seems that he is not actually trying to define “procedural quality” but a “process quality” as previously mentioned, but he is then forced to conclude that we then need to explore the causality between this process quality and “ultimate effectiveness”

and then really not delivering a straight answer to the question (Retief, 2007, p. 98).

The compilation of different concepts more or less covering the same aspects of reality revive the definition by Kuhn (1962), that underlines that social sciences were not a cumulative science compared to natural sciences. There is no doubt that many of these authors are researching the same thing but use different words for it. There is no doubt either that new concepts arise or come into focus as time passes, like we have heard that procedure/quality has shifted to something more like process/effectiveness as we see it today. Finally some might have broader or different views of what is in the focus of their research and would then use genuinely new concepts to cover these as different or new parts of reality, found in *statu nascendi*.

In order to conduct an overview of the different wordings used in the six comprehensive models of causation we find the most abstract (most comprehensive) version formulated in each article. As a criterion we state that the model should contain 2–20 elements or groups of factors that are condensed or otherwise generated, but that provide us with a model that describes the fundamental characteristics of how effectiveness is produced. If you have less than 2 groups it might be too abstract, but moving closer to 20 certainly includes too many details and complications. Among the 30 articles (plus our own, Zhang et al., 2013) we identified 6 articles from which something like a “comprehensive model” could be argued or carved out. These 6 models are then compared in Table 6, where we use our own model (Zhang et al., 2013) as a template for how a satisfactory distinction could be made. The reason behind this is that our model is well documented and produced from many “notions” found in the text and then condensed into the 4 overall modes of causation (see Table 3). Furthermore we – as well as a few others – have a vital distinction between “general factors” and “stage factors” (most notably Noble 2009) or, as we find it elsewhere, an overall division between for example effectiveness criteria and context criteria (Fischer and Gazzola, 2006) or “necessary conditions for effectiveness and facilitating factors (Hilden et al., 2004).

Zhang et al., 2013	Fischer (2002)	Retief (2007)	Noble (2009)	Fischer and Gazzola (2006)	Hilden et al (2004)
		Context-specific	System, process and result criteria	Effectiveness criteria and context criteria	Necessary conditions for effectiveness and facilitating factors
Communication and understanding	Integration		Integration	Integration	Integration
	Participative	Participative	Participative	Participative	Tailoring
		Proactive	Wider learning		Information provided
Resources and capacities		Efficient		Efficient	
			Tiering Legal Provisions		Tiering Legal provisions
				Flexible	
Timing and organisation	Focused				
	Sustainability led	Sustainability led	SD lead Decision making	SD decision making Objective led Iterative	Timing
	Iterative			Adaptive	Networking
Will and trust					
	Accountable		Accountable Transparency	Accountable Transparent	Political will

Table 3. Comprehensive model of causation and how the critical factors from 5 other researchers fit into this subdivision. The first line identifies the authors and the second line lists some of the criteria they have used.

Taking a closer look at the different concepts condensed from the 5 articles that were identified as having ambitions of establishing a comprehensive model, covers a broad range of critical factors that in one way or another contribute to positive or negative impacts on SEA effectiveness. Putting the results from the 6 articles on the table in order to compare the 5 of them with our own model described in Zhang et al. (2013) gives some indication on how well they fit together, in the sense that they could be condensed into one comprehensive model. The aim of this article is of course not to claim that such uniformity exists among the proposed models, but to form the starting point for a better understanding of the complexity of these factors. In that sense Table 6 can be seen as a map that shows the variety between a group of central factors that are relevant but also points to where a further integration could take place.

## 7. Conclusion

Needless to say effectiveness must relate to the goals formulated in the SEA undertaken, be it as environmental goals, sustainability goals or other explicit goals. The effectiveness of a SEA or other processes is dependent on many factors that can impact on the process in a negative or positive manner. Furthermore the process that should lead to effectiveness is a complicated process as effectiveness can not only be related to the goal, but is also produced from indirect sources like the process itself, the efficiency by which it is performed and not to mention the broader impact that it might have on the society. In the first sections of this paper we sketch how these concepts could be kept apart in order better to clarify the historical trends as well as their recent complexity. This unfolding picture of different versions of how effectiveness can be addressed in SEA research is not meant to only deliver one correct answer but more to clarify the multitude of models and hence make it easier to be more precise when using such an important concept like effectiveness in our research.

The second part of this article addresses how different models adopting the concept of critical factors present their results as a more comprehensive model. All in all we have looked closely at 30 journal articles that more or less broadly deal with the critical factors that determine the effectiveness of the SEA. As far as we can see only five articles besides the one we have written ourselves has had broader aim that covers the whole SEA process. Hopefully this article should in other words contribute to the accumulation of knowledge within the

SEA profession. The aim is to unravel the many overlapping definitions used within this field and condense as much of this experience into more comprehensive concepts. One of the main obstacles for research is that the empirical input consists of a multitude of ways to talk about reality. For both lay people and researchers the next steps will always be to condense these into larger groupings of meaning that then gradually builds up to a hierarchy with the most abstract words at the top. But this kind of distillation/condensing (or induction which is the proper word for it) takes place in an amorphic process where the comprehensive concepts are both being informed from bottom up processes (induction) as well as from top-down process (deductive logics). That also implies that bottom-up processes are always being mingled with top-down process, so the meaning of concepts will by their inherent nature always be a mess. Tidying up is often necessary, and here we should stick to Kuhn's dictum on the non-cumulative nature of social science (which much of our research has), but also in his view the pejorative, as we would often like to evade the chaotic circumstances resulting from too many competing paradigms. We have embarked on this by carefully analysing how basic notions of "critical factors" are produced within the research literature and how it, through the ongoing research process, condenses into larger concepts that are proposed as vital parts of the explanatory power of his or her model. From the notions of critical factors we thus move to a more "comprehensive models of causation", i.e. establishing a joint model where at least the most common features among the competing research groups could successfully be brought together in a kind of historical compromise.

Another conclusion that is worth adhering to is the fact that it is necessary to work with a grouping between critical factors – which are often used synonymously with or closely connected to contextual or contingent factors. We thus have factors that are general in nature and some that are internal, more or less relating to procedures and steps already laid down in the SEA or EIA in accordance with their "rationalistic" nature. The division between general and stage-orientated factors is not impermeable, and future research should in our opinion look closer into the kinship with contingency and contextually, and also the conflicting geography of general factors and contextual factors need more elaboration.

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## **The influence of street level bureaucracy on the implementation of Strategic Environmental Assessment**

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**Abstract:** A number of factors are critical to the implementation of measures identified through strategic environmental assessment processes. This article addresses the challenge of implementation from a street level perspective and studies the role of planners and their use of discretion in the SEA implementation process: In which way might planners hinder or facilitate the implementation of SEA? And which coping mechanisms and discretions are deliberately or unconsciously developed and used by the planners?

The article reviews the literature on street level bureaucracy (SLB) in order to identify both factors influencing the implementation behaviour of street level bureaucrats and their coping mechanism when confronted with these factors. Based upon the SLB theory, a case study explores the SLB behaviour involved in the implementation of the SEA of the Copenhagen spatial plan from 2009. The study is based on a document analysis, a questionnaire and a focus group interview with environmental and spatial planners. The analysis shows a surprisingly high level of implementation of measures put forward in the SEA report, and underlines the role of planners at the front line of implementation, functioning as “innovators” during the SEA process and the following implementation of measures. The article documents the importance of examining planners’ role in SEA and their potential as levers for SEA implementation.

**Keywords:** SEA, implementation theory, effectiveness, decision-making, spatial planning, street level bureaucrats.

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## 1. Introduction

A successful implementation process can function as a linkage between Strategic Environmental Assessment (SEA) and planning, and increase the effectiveness understood as the influence on decision-making and planning practice.

SEA implementation can be viewed as a top-down approach, assuming that the politically decided SEA report is interpreted and carried out into practice by planners who execute the SEA “at the bottom”. However, it may be quite a distance from the announcement of the SEA report, including mitigation measures minimising negative impacts and enhancing positive, till it influences planning practice and decision-making. The top-down perspective on implementation rests upon the assumption that the planners at the street level do not execute substantial discretion (experienced or developed freedom). This compliance model, and embedded premises of the planner’s behaviour being centrally controlled, is questioned in this paper. Using a bottom-up approach to implementation, the paper explores how planners establish a discretionary room and fill out that room in both the development of the SEA report and the following implementation of the measures put forward in the report. In that way, the paper sort of reverses the premises of a policy hierarchy as laid out in the top-down approach, and argues that planners act as policy-makers in the discretionary processes surrounding the SEA. Recent articles in the field of environmental assessment have reviewed the role of individuals in the implementation process, and also indicate that planners play a central role in the SEA implementation. Stoeglehner et al. argue that planners’ ownership of SEA is crucial for effectiveness, including the ownership of SEA’s concepts, the techniques/processes and outcomes (Stoeglehner et al., 2009). Sheate and Partidário investigated knowledge brokerage and found that planners can function as the knowledge brokers to link different social networks and facilitate information exchange and knowledge transfer; thus, supporting the decision-makers with refined assessment information (Sheate and Partidário, 2010). Hilding-Rydevik and Bjarnadóttir found already in their study of SEA implementation in land use planning back in 2007, that: “the individual components that make up an individual SEA implementation “context” also remain largely unaddressed” (Hilding-Rydevik and Bjarnadóttir, 2007, p. 667). They touched upon the “micro level conditions” such as the existing and institutionalized perspectives, norms, rules in which the actors are embedded

and learn from. Though bounded by various conditions, “they also have the capacity - if there is an opportunity - to reflect upon and review these, and to make more deliberate choices” (Hilding-Rydevik and Bjarnadóttir, 2007, p. 676). Fischer, on the other hand, categorizes the planner’s role according to the three levels of the decision-making hierarchy; at the policy level, planners perform as policy mediators to deal with the high conflicts and the debate of values. Planners in the plan context act as entrepreneurs to advocate norms and reflect upon messages from higher tier policies, and at the programme level, planners are more technically oriented and thus act as technicians considering stakeholders’ values (Fischer, 2003, p. 165-166). The planners’ constructive use of discretion in an Environmental Impact Assessment (EIA) context is investigated by Christensen et al. who argue that “widening the room for discretion might entail that decisions are better off as the involved stakeholders can take part in this process, which is the nexus of governance” (Christensen et al., 2012).

The research presented above addresses the importance of planners and their discretionary power when making and implementing SEA at different levels. Despite these valuable inputs, there is limited detailed empirical research on how the discretionary power of the planners has been executed in practice and the motivation behind. This paper attempts to contribute to our understanding of the planners’ discretionary role in the SEA process.

Insights from the literature on street level bureaucracy and implementation theory help us to create a hypothesis on which factors influence SLB behaviour and thus the discretionary powers of planners. In this article, we look at how discretion functions, especially in regard to different coping mechanisms, which can unveil how planners use their discretion when developing and implementing the measures in the SEA. The context of this research is the implementation of the mitigation and enhancement measures embedded in the SEA report of the spatial plan of the Danish capital, Copenhagen. The street level bureaucrats (SLBs) investigated in this study are considered as urban and environmental planners who:

- Are viewed as important policy makers because of the decisions they make in undertaken or interpreting the SEA.
- Employ a variety of coping mechanisms and discretion to make the SEA implementation manageable – but they may also distort the implementation.



Our research is based on theoretical assumptions about SLB. First, we draw on insights developed by Michael Lipsky (1969, 1980) and developed in more recent studies by, e.g., Taylor and Kelly (2006), May and Winter (2007), and Meyers and Vorsanger (2003). The paper begins with a review of the literature on street level bureaucracy. This review forms the conceptual foundation including an outline of factors theoretically influencing the action of SLBs and their individual coping mechanisms. Then we describe the case: Development and implementation of the measures embedded in the SEA report of the spatial plan in Copenhagen. The case study is guided by three overall questions: (1) In which arenas and planning documents are the SEA measures to be implemented? (2) To which extent has the implementation taken place? and (3) Which are the supportive and hindering factors for the implementation framing SLB? The methodology employed and data collected are described, whereupon the outline of results and final discussion of findings are presented.

## **2. Street level bureaucracy and conceptual foundations**

Different models for explaining the “missing link” between policy-making and the policy outcome have been developed within the theoretical field of implementation. Among these, top-down and bottom-up are the most influential models to conceptualise the implementation process (Matland, 1995; Hupe, 2011).

The top-down approach, here represented by Mazmanian and Sabatier, considers policy formulated “at the top”, and then being interpreted and put into practice “at the bottom” by those “agents” who execute the policy to obtain the policy objectives (Mazmanian and Sabatier, 1983). The assumption within this model is that the central government determines the policy and its objectives, and the implementation takes place separately from the policy. The crucial issue for the evaluation of the policy outcome is to find out to which extent the objectives were achieved over time (Sabatier, 1986). Top-downers were criticized for failing to consider the limitation of the hierarchical control and the adaptive policy process, especially the alternation of policy objectives during implementation (Barrett, 2004; Matland, 1995). Furthermore, the legislative language could be seen as ambiguous and open to interpretation; thus, with difficulty in complying with the original objective. Moreover, the central actors from the top are neither the only players nor can they control the behaviour of

other implementers, especially at the street level (Barrett, 2004; Matland, 1995; Sabatier, 1986).

The criticisms of the top-down model provided the room and basis for the development of another major school of implementation perspective, the bottom-up approach. The bottom-uppers argue that the service deliverers at the street level have the substantial discretion to deliver the policy results and, thus, to a certain extent, are the policy makers at the front line (Weatherley and Lipsky, 1977; Lipsky, 1980). The bottom-up approach seeks to develop the structure of the network of implementation from the bottom to the top. The major concern is which factors have contributed to the achievement of the goal and due to which reasons have the adaptation and alternation of a policy during implementation happened in a certain way. Although the bottom-up approach was criticized for overemphasizing “the ability of the periphery to frustrate the center”(Sabatier, 1986) and for generalising the suspicious capacity to all target groups, this inductive methodology provides a flexible tool for mapping the contextual factors to better understand the implementation failure of the local case (Moore, 1987; Sabatier, 1986).

In this case, the theories on SLB guide us in mapping the difficulties and possibilities confronted by planners when developing and implementing the measures suggested in the SEA report of the Copenhagen Spatial Plan. Moreover, the theories inspire us in terms of creating an overview of the factors which exert influence on the implementation outcome. As there are different schools to interpret the importance of SLB, the following will go deeper into the presentation of some major thoughts and basic ideas from different scholars.

### 2.1 SLBs and factors influencing their work

As Lipsky stated, street level bureaucrats are those individuals in public agency services “...interacting directly with citizens in the course of their jobs, and who have substantive discretion in the execution of this work...” (Lipsky, 1980, p. 3).

Lipsky developed his SLB theory in the context of urban policy in North America, and it can be questioned whether the theory is applicable to a Danish urban planning context. Although SLBs are individuals from different agencies performing divergent tasks in various contexts, we argue that their working

conditions and collective behaviour still share some characteristics and could be generalized – and tested empirically. Regarding the clientele of SLB, Lipsky refers to them as “...the population on which street-level bureaucrats act” (1969, p. 2). Although the theory is intended to apply to all clients of public agencies, Lipsky (1969) underlines the claim that it is most appropriate to low-income and minority groups due to their higher dependency on public organisations to provide fairness and fulfil needs. The service or attention delivered by planners in this case is planning and impact assessment; and the clientele is, besides the politicians who get input to decision-making, “the environment” and thereby the broader society, requiring that public organisations provide environmental protection and outbalance in relation to other clients’ goals.

SLBs have high degrees of discretion under certain regulations to interact with large classes of clients, and thus face typical challenges during their daily work:

- Overload and time limit for decision-making, which demands quick response and rapid solutions to be made (Ellis et al., 1999, Lipsky, 1980).
- Inadequate resources. The personal resources are always limited for SLBs to conduct their work, as the demand for services will always increase to consume the marginal supply (Ellis et al., 1999; Lipsky, 1980; Murray, 2006).
- Ambiguity of goals, as the goal expectation from the agencies tends to be vague or conflicting, and it is thus difficult to measure the performance or the goal achievement of the SLBs (Ellis et al., 1999; Lipsky, 1980; Prottas, 1978).
- Uncertainties of methods. SLBs encounter role ambiguity and undertrained skills to deal with flexible situation, as there are no guidelines or standards to which they can refer (Lipsky, 1980).
- Unpredictability of clients. SLBs face emotional people during daily work as well as more uncertainties and unpredictable conditions, which may appear with no time and signal for SLBs to get prepared, and thus quick adaption and adjustment or even emergency solutions are needed at any time (Lipsky, 1980).

Besides the above difficulties confronted by SLBs, other factors influence the extent to which street level workers deliver the supposed policy. It is argued that different interpretations of policy and different expectations about the role that

they play are crucial for the SLBs and for how they influence the implementation of the policy (Sandfort et al., 1999; Loyens and Maesschalck, 2010; McLaughlin, 1987). Other explanations focus on the preference of SLBs to live up to their professional reputation (Schofield, 2001; McLaughlin, 1987).

Winter (1994) further adds factors that affect SLBs' behaviour, including: 1) the type of policy mandate; 2) the working environment of the agency; 3) the political environment of the agency; 4) management style; 5) the organisational culture of the agency; 6) the capacity, as well as 7) the individual background of the SLBs (such as race, socio-economic background, education, and individual political attitudes) (Winter, 1994). Table 1 gives an overview of possible factors influencing the behaviour of SLBs.

Factors to influence SLB implementation	Authors
Overload	Ellis et al., 1999; Lipsky, 1980; Winter, 1994; Weatherley and Lipsky, 1977
Inadequate resources (tight time schedule)	Ellis et al., 1999; Murray, 2006; Lipsky, 1980; Schofield, 2001; Weatherley and Lipsky, 1977
Ambiguous and contradictory goals	Ellis et al., 1999; Prottas, 1978; Lipsky, 1980; Hupe, 2011; Schofield, 2001; McLaughlin, 1987; Evans and Harris, 2004; Weatherley and Lipsky, 1977; Spillane et al., 2002; Moore, 1987; Hill, 2003
Uncertainties of method	Lipsky, 1980; Weatherley and Lipsky, 1977; Moore, 1987; Hill, 2003
Unpredictability of clients/case - (Clients from diverse background with different and dynamic needs and SLBs need to make rapid decisions especially related to some emergency)	Lipsky, 1980; Taylor and Kelly, 2006; Moore, 1987
Misunderstanding and reinterpretation of the policy	Evans and Harris, 2004; Sandfort et al., 1999; Spillane et al., 2002; Moore, 1987; Hill, 2003
Role strain caused by different or even controversial role expectations from several sources	Loyens and Maesschalck, 2010; Weatherley and Lipsky, 1977; Sandfort et al., 1999

Unwillingness to change behaviour	Schofield, 2001; McLaughlin, 1987; Spillane et al., 2002
Seeing new ideas as familiar	Spillane et al., 2002
Frequent change of institutional settings	McLaughlin, 1987; Sandfort et al., 1999
- (Staff moving on to new positions, different programme clientele, changed resource availability, administrative rules changing on a constant basis)	
Organizational culture and political environment of agency	Winter, 1994
- (E.g., Professional norms, Political pressure)	
Individual background and attitude	Winter, 1994; Taylor and Kelly, 2006
- (Different socio-economic, ethnic background, private attitude and ideologies that bring with them different notions of fairness or justice)	

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Table 1 Selected factors influencing SLB behaviour.

## 2.2 Coping mechanism and discretion

To cope with the above factors, which are often barriers, SLBs can be innovative by developing some mechanisms to manage their work or maximize their discretion by the following means:

- Rationing services by queuing the jobs in a waiting list filtering potential clients who really need services; by increasing the clients' costs of applying; by presenting selective information or even making the SLBs difficult to reach, or by devising routines to simplify the case and reduce the uncertainty of their work (Moore, 1987; Lipsky, 1980; Murray, 2006). In the case of SEA, one example is the integration of climate change, with decision-making involving the postponement of handling climate change, while only assessing and presenting selective information in order to reduce complexity. Or vice versa, increase the information in a manner that better convinces people.

- Differentiation and prioritisation of clients to cope with resource limits and personal preferences. SLBs conduct their discretion by choosing those who have a higher potential for succeeding and by prioritising some clients over others in terms of sympathy, moral worthiness, etc. (Weatherley and Lipsky, 1977; Lipsky 1980; Winter 1994; Ellis et al., 1999). An example related to SEA is the situation in which planners choose to pursue those mitigation measures most likely to be accepted in the public and in the political sphere.
- Husbanding resources, such as slowing down the work pace to fill in the time available; working only on segments of the product of their work; reserving their full working capacity (Moore, 1987); screening as a gate keeper to build a buffer zone between SLBs and clients (Lipsky, 1980); rubber-stamping to adopt other's judgements to simplify their decision-making process, or by referring clients to another agency (Weatherley and Lipsky, 1977; Winter, 1994). An example seen from SEA practice is planners arguing and legitimising not to include climate change impact on the environmental baseline, due to the fact that the Ministry of Environment is not doing so in their own SEAs.

Table 2 summarises and gives examples of coping mechanisms found in the literature on SLB.

Coping strategies	Authors
Referring clients to another agency	Ellis et al., 1999; Lipsky, 1980; Weatherley and Lipsky, 1977; Winter, 1994
- (Passing the clients on to other colleagues or agencies)	
Rationing /husbanding service	Weatherley and Lipsky, 1977; Winter, 1994; Ellis et al., 1999; Lipsky, 1980
- (Rationing service to a limited number of clients and cases, minimizing the potentially time-consuming problem, keeping clients waiting, gatekeeper to filtering or screening out clients)	
Changing from enthusiastic attitude towards social work to a more cynical attitude to free oneself from guilt over unsatisfactory results	Winter, 1994; Weatherley and Lipsky, 1977
Modification of official goals	Winter, 1994; Weatherley and Lipsky,

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	1977
Routinizing their job and decision-making procedure	Winter, 1994; Prottas 1978; Weatherley and Lipsky, 1977
- (SLBs invented their own standard classifications of clients and combined those with rough rules of thumb for the further treatment)	
Prioritising job functions, clients and solutions, e.g., selecting those who are most likely to succeed or are less costly.	Winter, 1994; Murray 2006; Weatherley and Lipsky, 1977
Developing collective strategies to share solutions among groups of bureaucrats	Schofield, 2001
Controlling alternatives and information both coming from clients and bureaucracy	Prottas, 1978; Weatherley and Lipsky, 1977
Protecting a professional reputation and secure working environment	Schofield, 2001; Weatherley and Lipsky, 1977
Seeking safe solutions to secure tenure in the job and avoid risk	Schofield, 2001

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Table 2 Coping mechanisms potentially applied by SLBs.

It is debatable whether SLBs are implementing and transferring policy into practice, or whether they actually innovate and reshape the policy outcomes, which could go beyond the original expectation. Nevertheless, the SLB theory can inspire our understanding and critical thinking on what happens during the development and implementation of SEA measures; the role of SLBs and their use of discretion. Through this lens, the implementation failure or success is explored more thoroughly on the basis of theoretical reflections.

### 3. The case: SEA of Copenhagen Spatial Plan 2009

The case chosen is the SEA of the Copenhagen Municipal Plan 2009, which is a spatial plan covering the total geography of the municipality of the capital. The Danish municipalities have almost full planning control of urban areas and the open countryside, and therefore play a central role in setting the goals and frames for future development.

The spatial municipal plans cover a period of 12 years, and include: “1) a general structure that outlines the overall objectives for development and land

use in the municipality; 2) guidelines for land use, etc.; and 3) a framework for the content of local plans for the specific parts of the municipality...” (The Planning Act, 2007). The guidelines must cover, e.g., the location of areas designed for various urban land uses, retail structure, the location of transport facilities and technical installations, the administration of agricultural and nature protection interests, and the protection of cultural, historical and landscape assets, etc. (The Planning Act, 2007).

The plan is revised every four years, and it is up to the municipality on the basis of development and political stands, to decide upon the level of revision. In 2007, Copenhagen decided to make a complete revision, and the SEA investigated in this paper therefore concerns the full plan.

The SEA was undertaken according to the Law on Environmental Assessment of Plans and Programmes, which to a very large extent follows the EU Directive. Copenhagen decided to go beyond the legal requirements, and the explicit ambitions concerning both the process and the methodology are the reasons why this case of study was chosen.

The uniqueness of the Copenhagen SEA case, that distinguishes it from other SEAs in a Danish context, is mainly based on the following conditions:

- 1. The assessment was undertaken at a very early time in the planning process and with a high level of engagement from planners.*

In practice, the SEA was initiated before any text was written on the plan. The SEA took a point of departure in the spatial strategy, which was decided upon in 2007, and outlined some strategic objectives and visions for the development and the forthcoming spatial plan. This strategy is not mandatory for SEA.

The explicit wish was that the SEA should make a difference and be undertaken at a time with “...actual opportunity to affect the plan development...” (Copenhagen Municipality, 2009, p. 5). The SEA was then continuously adjusted according to the increased level of detail in the plan draft.

Copenhagen did the first SEA in 2005 without any legal obligation, but based upon a wish to be proactive. The experiences were collected and evaluated at



that time, and the SEA of the Spatial Plan 2009 was “...undertaken on basis of recommendations from the first try on environmental assessment in Copenhagen Municipality” (Copenhagen Municipality, 2009, p. 5).

*2. The assessment process was inclusive beyond requirement and average practice*

Besides the mandatory hearing of authorities, a range of NGO's was contacted in the early phase and was thereby given the opportunity to give input to defining the scope of the SEA.

Internally, the definition of the scope and the assessment of the impacts of the SEA were based on workshops with employees from relevant departments representing the broad concept of environment in the law. According to the experience in the municipality: “the participation in the workshops has given the employees increased knowledge of environmental impacts and mitigation measures; and this knowledge is used in the preparation of the municipal plan in the respective departments. Since the environmental assessment is undertaken at a relatively early stage, ... the increased knowledge has affected planning in a positive direction” (Copenhagen Municipality, 2009, p. 23).

*3. The responsibility for implementing mitigation is very clear*

According to the law, mitigation measures cover measures to “avoid, minimise and compensate”. In many cases, the impacts of the planning actions on the spatial plan are positive and in accordance with the goals related to the environmental parameters. In these cases, the SEA has been used to assess whether the positive impacts could be enhanced. Thus, the SEA includes both mitigation measures and what is termed “enhancement” measures.

The measures could be implemented directly through the plan itself – others needed implementation in the afterwards planning, hereunder the local planning and EIA work.

The SEA report is completely transparent regarding the level and the planning processes/document in which the measures are to be implemented.

The characteristics described above make this case interesting in itself. It represents what we later term an “intrinsic case”, about which we wanted to learn more – and especially how the implementation process and the role of the individual planners function in this context with high ambition regarding the SEA implementation.

#### **4. Methodology and data**

The uniqueness of the case as presented above is what makes this an intrinsic case study, which according to Stake (2003, p. 136) is “...if it is undertaken because, first and last, the researcher wants better understanding of this particular case (p. 136).” The motivation and interest is due to the uniqueness of the case and mean that the case was pre-selected.

The aims of the case study are twofold. Firstly, we aim to explore and understand the SEA implementation and the role of the planner in this process. Secondly, we aim to test the theory on street level bureaucracy.

The focus is on the implementation of the mitigation and enhancement measures as described in the SEA report, and the overall questions guiding the case study are:

- (1) In which arenas and planning documents are the SEA measures to be implemented?
- (2) To which extent has the implementation taken place?
- (3) Which supportive and hindering factors for implementation frame the SLB?

The methodology employed covers documentary analyses of the SEA report; a questionnaire to the key environmental and spatial planners involved in the SEA and plan implementation, and finally, a focus group interview.

The planners involved in the case study were selected together with a project manager on the spatial plan and SEA from 2009. The group includes two spatial planners and two environmental planners. The criterion for selection was to include the planners being most active within the planning and SEA process.

The **spatial planners** are from The Finance Administration, The Urban Development and Infrastructure Centre:

- Spatial planner 1 (SP1), Project manager on the spatial plan from 2009 and the accompanying SEA
- Spatial planner 2 (SP2), Project manager on the SEA of the current spatial plan 2011.

The **environmental planners** are from The Technical and Environment Administration, The Environment Centre:

- Environmental planner 1 (EP1), Taking part in the SEA work
- Environmental planner 2 (EP2), Taking part in the SEA work

#### 4.1 Documentary analysis and questionnaire

For the documentary analysis, two researchers individually analysed the measures in the SEA report from 2009 and the level and type of implementation. Subsequently, the results were aligned and categorised.

The next step in the research process was to analyse the level of implementation; and for that purpose, a questionnaire was developed. The questionnaire lists all the measures and four possibilities of ticking off the level of implementation: “Fully implemented”, “partly implemented”, “not implemented” and “not clear”. The key planners completed the questionnaire individually.

The answers were analysed, especially with a view to whether any type of measures or any specific environmental parameters were notable. Differences in the assessment of the implementation level were also found and brought to the focus group interview.

#### 4.2 Focus group interview

A focus group interview with the key planners was held with the purposes of:

- Validating the results from the documentary analysis and the completed questionnaire, and
- Exploring the role of the planner and factors either hindering or supporting the implementation and framing of SLB.

The focus group interview is “a research technique that collects data through group interaction on a topic determined by the researcher. In essence, it is the researcher’s interest that provides the focus, whereas the data themselves come from the group interaction” Morgan (1997, p. 6). The theory on SLB is here used to guide the case study in an exploratory way. The theory has given direction and structure to the set of questions raised in the focus group interview. One researcher used the questions to moderate the dialogue and exchange of views and experiences during the interview. Besides a moderator, a helper and two observers were present during the interview.

The focus group interview was transcribed and, subsequently, validated by the interviewees.

## **5. Results on SLB in SEA practice**

This section examines the findings on where to implement the mitigation and enhancement measures and the level of implementation carried out. Further, it looks into the overall institutional factors framing SLB and supporting SEA implementation. Finally, examples of the role of SLBs and their use of discretion are presented.

### **5.1 SEA implementation is very dependent upon other plans and implementation levels**

46 mitigation measures and 24 enhancement measures are suggested in the SEA report, which also describes how and where the measures are to be implemented. The distribution of the measures according to the different overall environmental objectives is shown in Table 3.

Overall environmental objective	Mitigation measures	Enhancement measures
Secure biodiversity, flora and fauna	5	7
Secure living conditions, including social security and material goods	9	6
Secure human health	11	2
Secure air quality	2	0
Limit climate impacts	10	1
Protect cultural heritage and landscape	1	1
Protect architectural and archaeological heritage	2	3
Limit resource use	6	4
Total	46	24

Table 3 Distribution of mitigation and enhancement measures.

The documentary analysis demonstrates a high interdependence between the spatial plan and other planning arenas and documents (see figure 1). 39 measures are implemented in the plan itself, while 46 are dependent upon other types and levels of planning. Some measures are suggested to be implemented concomitantly in more than one place, such as in the municipal plan and consecutively in other plans, such as:

- 1) *Local planning* (concretize the objectives of the municipal plan and stipulate the use and development of smaller areas),
- 2) *EIA of projects*
- 3) *Partnerships* (with external actors in the municipality "...to find innovative solutions to concrete challenges in urban development", e.g., on low energy areas),
- 4) *Calculations and investigations* (e.g., calculation of total costs linked to low energy building and thereby make visible the economic benefit)
- 5) *The Copenhagen Climate Plan* (unanimously politically decided in 2009, and covers both mitigation and adaptation)
- 6) *Other overall planning* (future thematic planning or planning for larger areas, e.g., planning for the development of "The North Harbour")
- 7) *Project planning* (e.g., "The congestion project" and "The metro project")

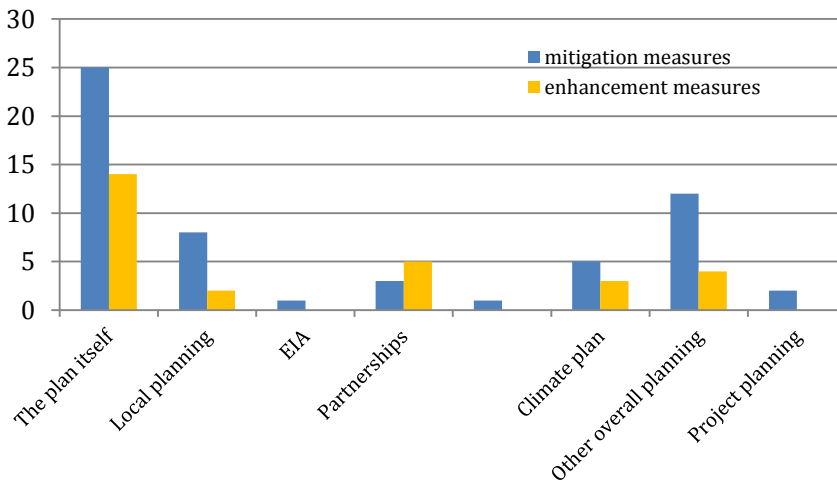


Figure 1 The arenas and planning documents in which the measures are described as being implemented.

The interdependence is not surprising since the plan is an overall plan setting the guidelines and specific frames for more detailed and sector-oriented planning. But the high level of interdependence could indicate a challenge for the implementation of measures, due to the dependence on other organisational units in the municipality, and even external stakeholders when it comes to “partnerships”.

## 5.2 High level of implementation has taken place

The implementation found in the case is presented in figure 2, and the overall conclusion is that a high level of implementation has already taken place. 74% of the mitigation measures and 79% of the enhancement measures are either fully or partly implemented. The focus group revealed that a significant part of the non-implemented measures was due to an ongoing more detailed planning process for especially the urban re-development project “North Harbour”.

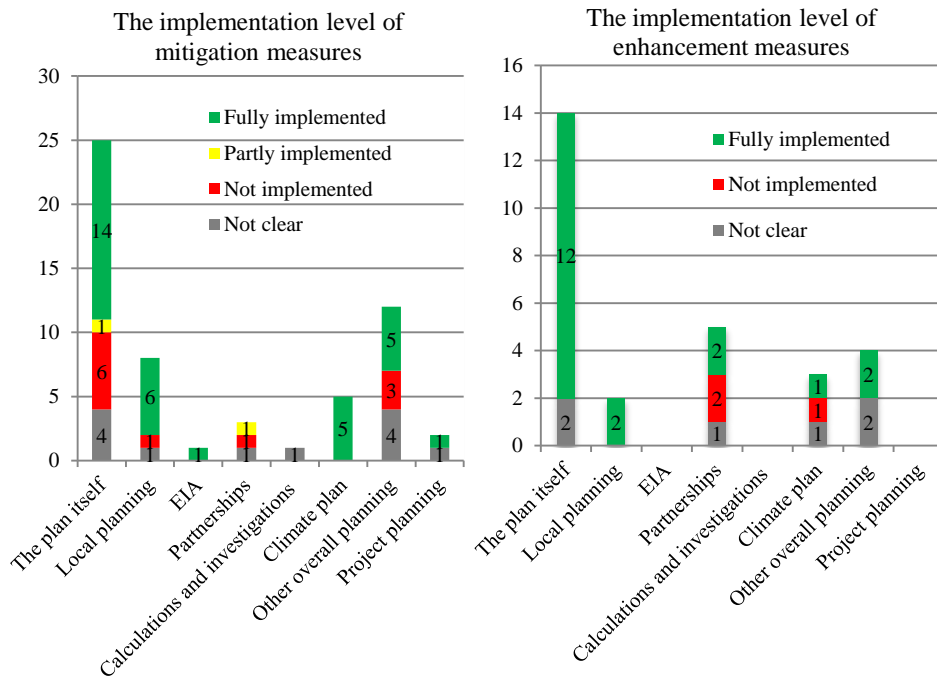


Figure 2 The implementation level of mitigation measures and enhancement measures.

The planners' response to the implementation level was unequivocal. All were surprised, and not at least due to the short period of time in which the plan and the accompanying SEA had been effective: "I was surprised because this is only 1,5 years old, and it is planned to run over a 12-year period, so it is a positive surprise that so many measures are implemented" (SP2). There has not been a specific project group or organisational set-up to secure the implementation of measures – "so it has sort of happened by itself..." (EP1). In the following two sections, explanation models for why this implementation has taken place are presented based upon the focus group interview.

### 5.3 Overall institutional factors framing SLB in the SEA implementation

The planners emphasise the following factors related to the broader institutional setting:

- "Early integration of the SEA into the planning process",
- "Use of politically decided objectives as references for assessment",

- “Respect for the planning hierarchy”, and finally,
- “In general, more project-oriented planning”.

Reflections in the focus group interview upon the high level of implementation firstly emphasise the early initiation and integration of SEA into the planning process. The SEA was initiated before the planning process formally began; when nothing was described on paper, except a general strategy (general direction, objectives). Further, this close and early integration is seen as supportive in terms of influencing planning and securing implementation: “The danger with environmental assessment is that you develop your own little secretary, living its own life, without affecting the related planning. Because then you just make a project within the project. And that is very dangerous with a tool [SEA] like this.” (SP1). The view is that the SEA is an assessment not necessarily needing a follow-up, since the responsibility is shared by the different subunits in the municipality. This view upon the role of SEA and the necessary early integration is, according to the planners, brought to the next SEA process.

Secondly, in the objective-led SEA (and assessment matrix), the planners use politically decided objectives from different sectors and sectorial plans in the municipality. The planners agree that this use of “institutionalised objectives” is supportive of the SEA and secures the commitment from the subunits in the organisation, which subsequently implement the initiatives, because “...it is something that we ourselves are working on and following up” (EP1). Working in the SEA with accepted and recognisable problems is also presented as an explanatory factor of the implementation.

Thirdly, a general respect for the planning hierarchy amongst employees in the organisation is presented as another overall factor securing very good accordance between the spatial plan/SEA and the local planning. Additionally, tiering is discussed as supportive with “...very well described themes, which repeat from the planning strategy level, over the municipal plan and to the local plan as well. There is some policy formulation which repeats throughout the planning” (SP1).

Finally, the changing nature of spatial planning towards a more project-oriented planning is underlined in the focus group interview. This is not specifically



related to the SEA and municipal plan but to the organisational processes and culture in general. The project organisation around especially larger urban development projects is experienced to increase the internal cooperation and the group work between different levels of planners and departments: "We get more and more project-oriented on the large development projects, and when we become that, then we follow in our departments. ....It means that the overall and local planning becomes extremely well integrated". The increased daily interaction across subunits and professional areas increases the more informal contacts between planners and creates a good basis for the SEA work.

#### 5.4 The role of SLBs and their use of discretion

Different factors, which influence the planner's role and actions, are found in the case study. Furthermore, the study gives examples of how the planners use discretion in their work.

##### *The planners are being realistic about never having enough time or resources*

The planners' realism regarding the limited resources available for the SEA work has influenced their approach to SEA: "I do not think we will ever come in a situation, where we can say to the Board "We would like to have ½ year extra for the spatial plan, because then the SEA will be better". So I believe more that we need to have it included from the beginning".

##### *The planners see the discretion as an advantage of their job*

In the focus group interview, different examples reveal how the planners both use and develop discretion in their work. One example is related to the content of the plan, which, compared to earlier, has become more action-oriented. One reason is the planners "... Own professional ambition to move from only being regulative to wanting more as a city..." (SP1).

The augmented project organisation in the municipality establishes important arenas for planners and professionals from different subunits to meet and exchange ideas: "...We had a lot of project groups... where we sat together and talked these things through, and we were talking together on a daily basis..." (SP2). This continuous exchange between SLBs is also used by individuals to decode and determine what is possible to succeed with and also to get an understanding of the system built around the follow-up on measures. This

decoding is seen as a competence and a basis for making the discretion needed in the process to avoid a later implementation gap.

*The passionate planner combined with political leadership support the implementation*

Individuals bring their driving forces into the planning and assessment process, and thereby decide personally to take a project leadership. One example brought up in the interview is the case of implementing green roofs as a mitigation measure for climate change adaptation, in which "...a single employee's enthusiasm and engagement in relation to put it on the agenda as an important theme" has made the difference: "she has been a passionate... underlined the significance and good in this measure" (EP1). So despite opposition, the measure was implemented. On the other hand, planners' discretion has to a large extent been supported and shaped by the political level. As we can see, all the 11 measures targeting at "limiting climate impacts" have been implemented well, as the political emphasis has been put on climate change adaptation and greening the city. The political signal is echoed and manifested in practice by different policy implementers, such as planners and politicians at the municipality level (May and Winter, 2007).

## 6. Discussion

The street level study of the SEA process in Copenhagen directs attention to the formulation and implementation of mitigation and enhancement measures at the "front lines". Based upon the SLB theory, we constructed an explanatory framework for SLBs' behaviour, as described in section 4. As presented in section 5, we found overall factors framing the behaviour of the planners, and we found that the individual use and development of discretion influenced the plan making and the following implementation. Overall, the empirical findings suggest that the framing and practice of the planners are challenging the SLB theory. Table 4 summarises how findings from the case study relate to the SLB theory.

Lipsky uncovered the nature of SLBs' work; the challenges with which they are confronted, and the way in which the SLBs exercise their discretion. Consequently, the coping strategy developed by the SLBs shows a negative picture of how they try to survive in the dilemmas with which they are

confronted, and thus how they develop ignorance or an escaping or avoiding attitude towards the difficulties. From Lipsky's viewpoint, discretion is a barrier to the implementation process, which should be limited and regulated.

<b>SLB theory</b>	<b>Copenhagen case</b>
Role strain of SLBs embedded into the institutionalization	Role conscious planners being highly self-conscious of the limited time and resources
Discretion as a barrier to implementation	Discretion as an advantage to implementation
SLBs develop routines and borrow these routines from each other	Planners try to be innovative and break the routines to be problem solvers
Internally intimate to simplify decision process	Internal commitment to decisions they have made
Escaping and avoiding, embedded negative attitude	Self-reflective and critical, really want to deeply explore and understand the situation, being open to criticise their planning system
Restricted and never satisfied working environment	Largely satisfied with their work environment and the progress they have made

Table 4 Comparison of the SLB theory and case findings.

Front-line discretion has been investigated from quite different perspectives since Lipsky's works. Many studies have showed the positive role played by SLBs (Brehm and Gates, 1997; Ellis, 2011; May and Winter, 2007). This study of the SEA development and implementation has proved again that the discretion exerted at the front line can be very context dependent. The planners in this case have a high consciousness of their roles and the reality in which they work. They turn the discretion, which they exert into an advantage in terms of being innovative. They are not afraid of breaking the routines to be problem solvers. They engage into the planning process to understand their situation. They are self-reflective towards their own system and possible influence. Basically, they are planners mainly satisfied with their working environment and the progress which they have achieved. In this sense, the study shows some common characteristics in line with what Schön has called "model II" of "reflective practitioners", in which practitioners have a high awareness of both

their own role and the areas beyond their control; and therefore they are likely to upgrade their internal dedication to make informed choices (Schön, 1983). The inner drivers of consciousness and satisfaction make it distinct for planners to operate and behave in this case. The ways in which they exercise their discretion reflect their commitment to the SEA implementation; rather than discretion exerted to receive rewards or avoid punishments (cf. “the reflective practitioners”, Schön, 1983). It is difficult to say whether the organizational culture shapes the individual behaviour or the individual discretion reshapes the organizational culture. Fundamentally, they are interconnected and intertwined with each other; thus, tracing the contingencies would be a difficult tasks requiring further exploration.

To take one step back to Lipsky’s and other relevant works as summarized in Table 1 and Table 2, it is not possible to map the totality of ways in which planners exert an influence during the SEA implementation process. Lipsky’s theory also refers to SLBs as covering a group of people in public service, which is highly generalized. Though they share some common characteristics, SLBs in different professional areas still possess some distinguishable features (Scott, 2008). However, the theory, in terms of the selected explaining factors, has stimulated our critical thinking on planners’ discretion within SEA.

We found that this case represents a “best case” in the following aspects. First, SEA starts early in the planning process, which gives an advantage to planners in prioritizing their schedule and structuring their role from the very beginning. Second, the collaborative spirit in the implementation process facilitates networking between different groups of stakeholders, thus providing a sound foundation for planners’ engagement in knowledge sharing and information exchange. Third, both mitigation and enhancement measures are proposed in the environment impact statement with clearly indications of how and where these measures are to be implemented. The SEA links different levels of planning and other relevant activities such as EIA and climate plan all together and functions as a signpost for the planners to monitor and reflect on the implementation process. Consequently, planners’ discretion is based on the context mentioned above, from which it should never be considered separately.

## 7. Conclusion

In this paper, we have examined the conditions for and the content of street level bureaucracy in an effort to explain the role of individual planners in SEA and planning practice. The main findings are:

- Planners in this case show their discretion during the development and implementation of the SEA. They use their discretionary power as an advantage to be innovative in their work, thus influencing the content and outcome of the SEA.
- Planners show a high consciousness of their working environment, such as, e.g., the limited time and resources. They develop a realistic understanding to reflect upon it, which further supports their coping mechanism to deal with it
- Street level research makes a link in the causal chain of SEA implementation, and investigates what implementing planners (SLBs) produce, as well as how and why. The case study illustrates how planners do not just do what they are told – but they do what they can and make environmental integration happen.

Our perception and knowledge on discretion has evolved with time since Lipsky's work. As Taylor and Kelly put it, "discretion should not be regarded as static, or more appropriate to a different era of policy-making and implementation. It should be seen as evolving according to the vagaries of public policy, changes in the organisations implementing policy and the expectations of service-users"(Taylor and Kelly, 2006, p. 640). By using a street level approach, we have a possibility of illuminating dimensions of SEA implementation that top-down approaches do not capture and examine the discretionary and agency practices involved in the SEA and planning processes. We find that the street level approach contributes with an important perspective to exploring the SEA implementation experienced at the ground level.

We should also bear in mind that the planners described here represent a distinct role in terms of influencing the SEA implementation process. It is a "best case", as we recognised, in the Danish context. As we could barely learn from past empirical studies in this area, it would also require further studies to know

whether the understandings of this study could be generalised, Therefore, it represents a future research option yet to be advanced.

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## **The discretionary power of the environmental assessment practitioner**

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**Abstract:** Discretion is an essential and unavoidable element of most decision-making and hence often closely related to the judgment exercised by politicians and practitioners alike. It is evident that discretionary power can be executed in different ways, leading to different results. Therefore, it also has a significant influence on the effectiveness of the environmental assessment (EA) as it is spelled out in detail in recent environment impact assessment (EIA) and strategic environment assessment (SEA) literature. However limited attention has been given to the practitioner's role and how they exercise their discretion while effectiveness and the implementation of decisions has been a recurrent theme in EA literature. The idea of discretion are in many respects always present in policy analysis and deserves more attention as it could add to these two ideas to establish a more complete picture. We try in this article to explore the connections between discretion and some of the fundamental ideas behind how EIA and SEA functions in our societies.

The starting point is to offer some fundamental definitions of discretionary power and then look into the more concrete examples of discretion found in the accounts from daily praxis. Based upon different ideas of discretion, the article presents and discusses a framework containing different dimensions of discretion: source, form, value and dynamics. A review of EA literature is undertaken with the purpose of mapping how discretion is studied and what kind of discretion is found in the context of EA.

**Keywords:** Impact Assessment, SEA, EIA, discretion, judgment, power

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## 1. Introduction

The purpose of this article is to highlight and unravel the role of practitioner's discretion and look closer into how that influences the effectiveness of the EA or other decision-making being executed. The discretionary role of practitioners is given attention in a variety of disciplines and research works, though mainly in public policy and political science. In our view discretion influences all decision-making within policies and a lot of concrete decision related to environment and planning. Just as we find in many other fields of policy, it is not only politicians but also administrative practitioners and the public that are involved in the implementation of a policy. Each step from a policy to its implementation ending up in output or outcome leaves room for such imprints on the results. The prevailing ideologies underline that much of the decision-making is rational, if not always on the policy side, then at least on the administrative side. Where policies can be seen to be symbolic, based on insufficient knowledge or a simple compromise between opposing groups of stakeholders, the implementation process is thought of as neutral and objective, thus following a consequential logic (March and Olsen, 1989).

When is discretion then exercised in EA? The discretionary decision-making can happen throughout the process (Wilkins, 2003) and involves judgment and choices, for example, on which projects and plans are mandatory to EA, how the significance of impact is determined, what scope should be included in the EA, who should be involved in the process, and how quality is determined. All these examples on discretion point to the fact that discretion can take place in many arenas during EA implementation process (Zhang et al., 2013).

Discretion, which is relevant to judgment and power, is often highlighted in effectiveness literature. Decisions made upon a subjective and value-laden basis are found in practice (Canter & Canty, 1993; Lawrence, 1993; Wilkins, 2003; Wood & Becker, 2005), and underline that practitioners possess the discretionary power to make various decisions based upon a few factors, including their judgment, ideology, and personal capability. Practitioners have predominantly been perceived as technician and/ or administrators with assessment skills and able to provide an objective and neutral documentation informing and advising the decision makers (March and Olsen, 1989). This viewpoint has prevailed under the dominance of the technical-rational thinking of EA, at least from its initiation in 1970 to the more governance oriented version that has been around since approximately 1989 where more emphasis is

put on public participation, communicative practices (Healy, 1997; Forester, 1993) and the role of deliberative practitioners (Forester, 1999). Planners are no more supposed to follow the objective rules and procedures, collect information and process the data so as to generate a neutral answer to an environmental problem mainly following logic of consequences (March and Olsen, 1989). Contrary to this we now realize that much decision-making is relatively political in nature and are influencing the policy-making process in a variety of ways (Bartlett & Kurian, 1999; Kørnø & Thissen, 2000).

Today it is obvious that most practitioners contribute to the decision-making within arenas where they can use their discretionary powers as well as advocate norms and mediate value conflicts (Fischer, 2003). Discretion is thus also created by the way our language is constituted as communicative praxis. Forester has argued that “the practice of planners is not only tool-like, but also communicative. The actions have to make sense to other people and shape others’ attention, expectation and understanding. ‘Being practical’ in planning is taking place concomitantly with ‘being technical’” (Forester, 1993, p. 25) and communication thus also leaves room for discretion alone by the fact that communicative forms of practices always unfold in the arenas in question. This is also the reason that EIA/ SEA effectiveness at a certain point is not only related to substantive effectiveness but also to “process effectiveness” (Christensen et al., 2013).

As a bridge connecting various communities, practitioners also engage in communicative praxis. This can take on many forms and be called quite differently by different schools of thought. Practitioners can function as knowledge brokers promoting knowledge-sharing and information transformation (Sheate & Partidário, 2010), or as change agents (Kørnø et al., 2011). Many more specific labels could be put on this broker or change agent because they have been identified as having pivotal roles to play in a host of different theories that are investigating the dynamics taking place in such arenas. As well as core concepts like change agents and brokers often described in organisational theory, there are others, such as boundary spanner (Aldrich & Herker, 1977), street-level bureaucracy (Lipsky, 1980), reflective practitioner (Schön, 1983) and deliberative practitioner (Forester, 1999). They all point to the fact that all arenas have room for discretion and all discretion can be molded and changed by agents that know of how to initiate change, so the change agents

encountered in all kinds of organizations are exactly the proof of the omnipresence of discretion.

## **2. Methodology and basis for study**

We found that a lot of interesting EIA/SEA research relating to discretion, in one or another form, only to a limited extent is put into a theoretical framework that specifically is based on understanding discretion. We have conducted a case study on street-level bureaucracy within SEA of a spatial plan which illustrated the valuable role discretion plays in securing SEA effectiveness (Kørnøv et al., 2013), but the research also questioned the negative connotations of discretion we find in most work on street-level bureaucrats (SLBs). The different ways for EA practitioners to exercise their discretion merits deeper understanding. It looks for the evidence or clues in the EA literature with relevant descriptions on where discretion comes from and how it is exercised by different groups of practitioners in practice. In this work the EA practitioners refer to a broad range of professionals being involved in the EA implementation process, such as impact assessors, urban planners, EA researchers and experts, the EA review team members and evaluators, amongst others.

Our empirical understanding of different sources of discretion is based on reviewing the existing literature. The study includes only peer-reviewed journal articles, and the search took place through Scopus. The keywords for the literature search includes SEA/ EIA/ EA/ environment assessment, and one of the following - discretion, judgment, subjectivity, value, power and deliberation. Some additional articles was included based on a snowballing technique, i.e., that they were frequently mentioned in the already-identified articles. The search period was from 1980 to 2012.

The literature found was then filtered by looking through the content to see if there were relevant discussions, either on the role of the practitioners or discussions on leaving room for making changes, flexible solutions, autonomy or exercising discretion during the implementation process of EA. The selected literature was scrutinised in order to find notions that could be used for mapping the current knowledge on discretion in EA literature.

### **3. Discretion and street-level bureaucracy**

SLBs cover a group of public servants who work at the front line in delivering public services, such as police officers, lawyers, doctors, social workers and teachers. (Lipsky, 1980). They represent the last link of decision makers who deliver the final decisions to the target group, thus mediating between the ambiguous policy design and the final demand resulting from each case. Room is always left for interpretation or reshaping of the policy to meet the individual situation. Thus SLBs have to be creative and innovative to be problem-solvers. By defining how the policy should be carried out, they consequently become the actual “decision maker” (Lipsky, 1980).

In Lipsky’s work, discretion is the main concern to explain how SLBs behave in public service and how complex and ambiguous policies are interpreted, reshaped and executed at the front line. SLBs work in the dilemma between the control from the management and using their own discretionary judgment to adapt to each unique case. They have learned where to find the balance as “the routines they establish, and the devices they invent to cope with uncertainties and work pressures effectively become the public policies they carry out” (Lipsky, 1980, p. xiii). The autonomy of SLBs embodies three aspects: modifying client demand (controlling the timing and pace of interaction), modifying work conception (simplifying the case at hand at making it routine), and modifying client conception, (differentiating clients based upon their preferences) (Hudson, 1989; Lipsky, 1980).

The reason why the SLB has been characterized as “negative” is owing its existence to the fact that the routines they establish is meant to mitigate the consequences of a situation where resource is never enough compared to the task that have to be executed. The discretion they exercise thus often becomes negative in the sense that it aims at pushing task to others, keeping customers away, only taking the interesting tasks and so on. Focus for Lipsky is only on these kinds of discretions by overlooking many situations where management leaves room for the practitioners to initiate a positive process and deliver some positive outcomes that are for example what could be called win-win situations, or just unexpected positive outcomes. Brehm and Gates argue that discretion at the front line is not only influenced by control from upper level, but also relates to personal preferences, different perception of reality and the willingness to share the information with clients (Brehm & Gates, 1997).

#### **4 Theoretical understanding on dimensions of discretion**

Being inspired by Lipsky, more work has been done to focus on those individuals and their roles in solving problems and making a difference. Donald Schön describes the role of reflective practitioners, who need to understand each situation case by case: face the unpredictability, uncertainty, complexity, uniqueness and conflict; frame and reframe the issue at hand on what they could reflect upon; and then take action based upon their professional judgment, knowledge and expertise (Schön, 1983). Addressing mostly knowledge and its complexity focus has been on identifying the skills developed and how this kind of practice could foster skills that are designated as “expertise”, leading to a reflective practitioner (Schön, 1983, Healy, 1997) or deliberative practitioner (Forester, 1999). These models underline the necessity to take social and political context and complexity into consideration. The complexity and context as such necessitates that deliberative practitioners not only read and interpret the problem at present, but also commit to shaping and reshaping the organisational setting, facilitate the networking and collaboration possibilities, and explore the potential space and resources. They engage in the planning process but at the same time benefit most by keeping their distance to examine the situation, being alert for and critical of the various choices and alternatives. This allows them to mediate conflicts and incompatibilities, and weigh up the values and norms, with the emphasis on promoting social learning and mutual understanding (Forester, 1993).

Although practitioner’s discretion is acknowledged and presently attracts more attention, our understanding of how it functions in practice is still fragmented. As Dworkin puts it, ‘Discretion, like the hole in a doughnut, does not exist except as an area left open by a surrounding belt of restriction. It is therefore a relative concept. It always makes sense to ask, “discretion under what standards?”’ (Dworkin, 1978, p.31). Though in practice the boundary of discretion is not as visible as the shape of a doughnut, it could be misleading as there is no clear distinction between discretion and its surroundings. In a general sense, the scope of discretion should be within a certain boundary, for example, the law, the rules of the agency or community standards (Galligan, 1986; Prottas, 1978; Vinzant & Crothers, 1996). Very often we see that the definition on discretion becomes a long list of different aspects encountered when reflecting on the nature of discretion, and not that much aiming at establishing models or clear definitions.

#### 4.1 The form of discretion

Discretion could be exercised at different stages of an impact assessment from an implementation perspective, which is identified as the form of discretion here. Discretion could be exercised over the input of an implementation. An example in EA practice for *input discretion* could be in the agenda setting of an SEA to decide how much commitment and resources are in need.

Barth's process and substantive perspective on discretion (Barth, 1992) has been further unfolded by Vinzant and Crothers (1996) in their work on street-level leadership. Here we use their distinction between discretion over means (or process) and discretion over ends (or outcomes) (Vinzant & Crothers, 1996). Practitioners may exercise power over both or just one, depending on the circumstances. In real-life practice it might be difficult to make a clear distinction, but is 'an analytical useful way to think about the kind of choices that street-level public servants are called upon to make' (Vinzant & Crothers, 1996, p.465).

*Process discretion* refers to the situation when a practitioner decides upon how to achieve a specific goal (Vinzant & Crothers, 1996, p.466). For example, an EA practitioner may exercise process discretion when deciding upon how to organise the EA process and which stakeholders and/ or experts to be involved.

*Outcome discretion* refers to when practitioners 'decide what action to take, or whether to take any action at all' (Vinzant & Crothers, 1996, p.466), and relates to choices on which outcomes and objectives to seek. For example, EA practitioners exercise outcome discretion when deciding upon whether to mitigate a certain environmental impact and with what measures. This example of outcome discretion is possible because several outcomes may be acceptable due to the judgment of significance involved. The three elements – input, process and outcome of discretion – function at different stages of EA implementation.

#### 4.2 The value of discretion

Discretion could be perceived as either positive or negative, or even neutral. Discretion can be categorised as positive, when it is pursued in the way towards promoting wanted goals and intentions (Forsyth, 1999). Researchers describe discretion variously as wisdom, authority, personal input and the power to make judgment beyond the rules to solve complex problems (Fletcher, 1984; Vinzant & Crothers, 1996). On the other hand, discretion is seen as a kind of frustration



in the face of gaps in the rules and thus threatening official power and lengthening the chain of accountability, leading to uncertainty, unpredictability and insecurity (Forsyth, 1999). Discretion could be over-exercised by SLBs and used as the excuse to shirk from duty or simplify the task at hand, which, from a management point of view, should be minimised (Brehm & Gates, 1997; Lipsky, 1980).

Forsyth asserts that discretion could be exercised in a neutral way if it is completely compliant with the dominant professional methods, procedurally and substantively in line with the rules, or if it stands between competing values and is thus ethically neutral. At the same time, it is acknowledged that absolute neutrality does not exist in any sense (Forsyth, 1999).

In any case, discretion is not likely to be eliminated and its value depends very much on how it is exercised (Vinzant & Crothers, 1996). Discretion hereby also becomes dependent on the situation and context. Whether the results of discretion then are positive or negative depends upon how discretion is used and with what intentions (Davis, 1969, p.25).

#### 4.3 The dynamics of discretion

Discretion is always exercised within certain frames regulated by politicians, laws and norms of the society. The extent of how much discretion could be used is not static and changes dynamically in accordance with its surroundings, which could be increased, decreased or in a certain balance for a short period. The boundary of discretion could be reduced when more pressure is imposed to restrict practitioners' flexibility and autonomy, either by detailed regulations or strengthened supervision from upper level management. Conversely, it could be increased, for example when practitioners fight for more freedom for their rights of appealing or enter into the political arena to make their voices heard and requirements considered. The discretion practitioners possess could be kept in a balance during a short period when a certain consensus has been built upon with each party satisfied with the situation, albeit perhaps only temporarily. The balance could be lost again, whether due to changes or inputs from above or below, leading to more fluctuations in how discretion is wielded, depending on the situation.

#### 4.4 The source of discretion

The fourth dimension explored is the source of discretion. We can differentiate between rule, value and task discretion depending on where discretion comes from (Taylor & Kelly, 2006).

*Rule discretion* is constrained by various legislation, regulation, ordinance, rule, standards or guidance of organisations. In principle, more rules mean less discretion, but rules and discretion are also often inter-promoted and inter-inhibited (Galligan, 1986). Rules are created to control discretion and regulate behaviour; meanwhile more discretion is needed as there is always a question of which rule under what condition and how to interpret and implement it. Discretion grows or diminishes according to the debates taking place on the exact meaning of the rules. This leaves room for adapting and reshaping each rule in its own context (Evans & Harris, 2004; Hilding-Rydevik & Bjarnadottir, 2007; Taylor, 2007). Rule discretion can be given formally or informally (Goodin, 1986). ‘Formally’ here means when rules grant certain practitioners power. For example, SEA legislation gives practitioners freedom to choose methods within the prescribed procedure. Informally, rule discretion ‘derives from vagueness in the formulation of rule-statements’ (Goodin, 1986, p.235).

*Value discretion* is confined or expanded by personal judgments, subjectivity and preferences based on individual knowledge, perception and belief (Taylor & Kelly, 2006; Ellis, 2011).

*Task discretion* is determined by the complexity and unpredictability of the tasks and the individual capability to execute them (Taylor & Kelly, 2006). The three sources of discretion co-exist and interrelate; they cannot be separated from one another.

The four dimensions are presented in Table One below. This sets out a framework for how discretion can be investigated and understood in the EA context. There is some evidence found in the literature showing where discretion comes from. This will be discussed in the next section, with an emphasis on an empirical understanding of the source of discretion.

Table One: Framework for dimensions explaining discretion

<b>Form of discretion</b> Input (Decide upon if) Process (Decide upon how) Outcome (Decide upon what)	<b>Value of discretion</b> Positive Negative Neutral
<b>Dynamics of discretion</b> Increase Decrease Be in balance	<b>Source of discretion</b> Rule discretion Value discretion Task discretion

## 5. The source of EA practitioner's discretion

Practitioners play a crucial role in the EA implementation process. Fundamentally, they exercise their discretionary power in every choice they make. There is evidence showing that practitioners possess the autonomy to make many decisions along the way to interpret various directives and guidelines and decide how to adapt to the specific case at hand (Susskind & Dunlap, 1981). Based upon the theoretical understanding of the difference sources discretion comes from, this section aims to supplement this with an empirical understanding of how rule, value and task discretion are exercised by EA practitioners to influence effectiveness.

### 5.1. Rule discretion in EA implementation

EA legislations and guidelines formulate one of the most important boundaries for a practitioner's discretion, which defines the goals, scope and procedures of EA practice. There are many chances for rule discretion when various EA legislations and guidance allow space for a practitioner's interpretation due to ambiguous wording and abstract concepts (Christensen & Kørnø, 2011). The definitions in the regulations that are generally formulated cannot cover each specific situation. As Wiklund outlined, 'EA regulations normally provide guidance by identifying a set of stakeholders who must be consulted... Naturally, the regulations provide inclusive definitions of the public. The problem is, however, that the public-the persons affected and their associations and organizations- is "specific to time, site and issue"' (Wiklund, 2005, p.286).

Besides the gap between rules and practice, there is also opportunity for discretion when the coverage of the requirements is partially or inadequately defined, leaving the practitioner acting at their own discretion (Bina et al., 2011; Wiklund, 2005). One example is that the SEA guidelines only set the minimum standard for public participation and do not provide a sufficient checklist of planning activities that need an SEA. This excludes other types of plans that are highly relevant, leaving space where practitioners must make specific decisions.

The process of applying the rules or legislations is itself discretionary (Huber & Shipan, 2002). Changes to the rules in the implementation process can bring uncertainties and risks (Cherp et al., 2007), leaving practitioners unsure how to adapt to the changes. Furthermore, symbolic regulations with clearly demonstrated objectives and goals but no specific means to achieve them, transfer the power to practitioners to decide upon how these goals could be achieved (Isaksson et al., 2009). Nevertheless, an adaptive and flexible approach is plausible to involve learning in correspondence with rule changes, as Kørnøv and Thissen argued: ‘possible legal frameworks for SEA should prescribe what should be achieved (depending on the specific objectives of SEA) rather than how exactly this should be done’ (Kørnøv & Thissen, 2001, p.199).

## **5.2 Value discretion in EA implementation**

Value discretion is so deeply embedded into the practitioner’s perception of the EA implementation process that it makes it easy to ignore it, just as “a fish in the ocean would be the last to discover water” (Vicente & Partidário, 2006, p. 698). It prevails everywhere at any time as Susskind and Dunlap stated: ‘values---or non-objective personal judgments of merit or worth---influence the choices made at all junctures of an impact assessment’ (Susskind & Dunlap, 1981, p. 335). At each stage of the EA implementation process, from choosing professional team members to narrowing down alternatives, and from choice of models and techniques of prediction to mitigation measures, practitioners need to make judgments and decisions (Susskind & Dunlap, 1981). Take the EIA screening as an example. It is the practitioner’s autonomy to decide if a project’s impact on the environment is ‘significant’ and whether an EIA is needed based upon their professional knowledge and judgment (Christensen & Kørnøv, 2011). Furthermore, the prediction of future impact is full of uncertainty. Consciously or not, practitioners prioritise certain issues and ignore others (Boulton et al., 1982; Connelly & Richardson, 2005). Ignorance could happen unconsciously which has nothing to do with the professional capability of EA practitioners. It

is argued that ‘the more we learn about environmental systems the more we tend to be struck by our profound ignorance of the interactions and processes which govern their response to perturbations’ (Jones & Greig, 1985, p. 21).

Environmental assessment carries the political characteristics implied in the many expectations on EA and various conflicts of interests involved in different arenas of EA implementation. EA practitioners make an effort to mediate between detached norms and values and build up their professional stance, for example, by empowering the public to have the motivation and willingness to participate in the discussion and public hearing (Wiklund, 2005), or trying to convince the proponent of the benefits or values EA could bring (Cashmore et al., 2010). On the other hand, EA practitioners recognise themselves as a community with some values and norms shared and well-accepted. But these prevailing values are often attached to unspecified assumptions or undermined preconditions, leading each individual to be ‘unique’ to make a claim with their subjective understanding and interpretation (Morgan et al., 2012; Vicente & Partidário, 2006).

### **5.3 Task discretion in EA implementation**

Practitioners could approach their prescribed task in different ways. This is confined by many factors, i.e., available data and information, limited time and resources, and their knowledge and past experience (Wiklund, 2005). They possess the discretion to decide what kind of role they could play to fulfil their tasks, be it active and reflective on problem-solving, or passive and escaping from difficulties (Connelly & Richardson, 2005). They also have the autonomy to decide how far they should go and how well they could perform to satisfy themselves (Manheim, 1981). There are also different working styles practitioners could choose in order to accomplish their tasks at hand, such as formulating working teams with technical capacity and collaborating under the supervision of a team leader with management capacity (Susskind & Dunlap, 1981).

EA practitioners work in complex arenas that are full of dilemmas. To take public participation as an example, practitioners need to decide either to select the public and stakeholders deliberately or to follow the interest groups’ willingness to participate (Wiklund, 2005). Further they have to consider if a wide range of interest groups bring constructive solutions or more conflict and delay (Manheim, 1981; Wiklund, 2005). Practitioners try to bridge the gap

between expert and layman, to embrace varied participants without ‘either losing the respect of the public or abandoning professional competence’ (Lawrence, 1997, p. 92). Further, practitioners have to deal with both logical, technical and non-technical data such as comments, arguments and opinions, to balance both the subjectivity and objectivity in presenting the results (Alton & Underwood, 2003). Moreover, practitioners live under the institutional norms and politics of environmental assessment. They adjust themselves to learn communication skills in negotiations, and shift between different roles as expert, negotiation mediator and dialogue facilitator, consciously and unconsciously (Manheim, 1981; Isaksson et al., 2009).

## **6. Discussion**

Discretion comes from different sources in the EA implementation process. Rule discretion is exercised by EA practitioners due to the ambiguous definition in EA legislation and guidelines, the scope and coverage of these regulations, planner’s interpretation, and the gap between too general rules and too specific cases. Value discretion is relevant to practitioner’s personal perception, judgment, subjectivity and ignorance which influence each choice they make in implementing EA. EA practitioners possess the capability to fulfil their prescribed tasks in different ways. It is in their task discretion to filter information, mediate conflicts and tensions, and bridge the gap between experts and public. Rule, value and task discretion are not definitive and are impossible to be perceived separately in practice, hence are overlapped and intertwined. Value discretion could exert an influence at each step a practitioner must take and every task they must deal with. Task discretion could be restricted within the frame of EA legislations. Rules are intended to regulate task and value discretion while could never control them completely. Nevertheless, practitioners exercise discretion through the EA implementation process either consciously or unconsciously, to influence the outcome of an EA process.

It is difficult to say if practitioner’s discretion is a good or bad thing or if it should be controlled by the management. From the management point of view, discretion could be a barrier for the quality control of the EA process and thus should be constrained and minimised (Lipsky, 1980). Other empirical research has shown that practitioners could exercise the discretion they possess as an opportunity to solve problems innovatively (Kørnø et al., 2012). Discretion is dynamic in nature in accordance with the changing boundaries that confine it – institutional setting, political norms, limitation of personal perception and many

other contextual situations (Evans, 2010). As Galligan puts it ‘discretion is not a precise term of art, with a settled meaning, nor is it a concept which, when found to be present, leads to fixed consequences...the sense of discretion depends on the context in which it occurs, and the attitudes of the officials who are involved with it’ (Galligan, 1986, p. 54).

## **6. Conclusion**

The study touches upon the theoretical understanding of four dimensions of practitioner’s discretion. It further maps the empirical basis of how EA practitioners exercise their rule, value and task discretion in practice. Practitioner’s discretion prevails in different arenas of EA implementation processes, meriting further understanding.

Though dynamic in its nature and impossible to be eliminated in governance, discretion could be regulated properly in policies procedurally and substantively. EA laws and guidance could be structured cautiously in their wording, avoiding vague concepts and too broad a coverage of their scope.

To acknowledge practitioner’s discretion in practice is beneficial, allowing the understanding that different EA can be implemented. This in turn allows prediction of where a practitioner’s discretion plays a role, thus accentuating the positive side and limiting the negative.

This study opens up the discussion of discretion in EA and its pervading role in influencing EA’s performance. In only mapping three sources of discretion – rule, value and task – it leaves the question of where discretion exists in different stages of implementation unanswered, opened up for future research.

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## Declaration of co-authorship

### This co-author's declaration applies to the following article

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Overall, Jie Zhang contributed with 70 % of the text in the article.

More in detail, the extent of the PhD fellow's contribution to the article is assessed on the following scale

- A. has contributed to the work (0-33%)
- B. has made a substantial contribution (34-66%)
- C. did the majority of the work independently (67-100%).

Declaration on the individual elements	Extent (A, B, C)
1. Formulation in the concept phase of the basic scientific problem on the basis of theoretical questions which require clarification.	B
2. Planning of analyses and formulation of investigative methodology, including choice of method and independent methodological development.	A
3. Involvement in the analysis or the specific investigation.	C
4. Presentation, interpretation and discussion of the results obtained in article form.	B

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- C. did the majority of the work independently (67-100%).

Declaration on the individual elements	Extent (A, B, C)
1. Formulation in the concept phase of the basic scientific problem on the basis of theoretical questions which require clarification.	C
2. Planning of analyses and formulation of investigative methodology, including choice of method and independent methodological development.	C
3. Involvement in the analysis or the specific investigation.	C
4. Presentation, interpretation and discussion of the results obtained in article form.	C

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